Government of West Bengal

Irrigation & Waterways Directorate

ANNUAL FLOOD REPORT FOR THE YEAR 2013

DIRECTOR

Advance Planning, Project Evaluation
& Monitoring Cell
Jalasampad Bhavan, Salt Lake
Kolkata – 7000 091

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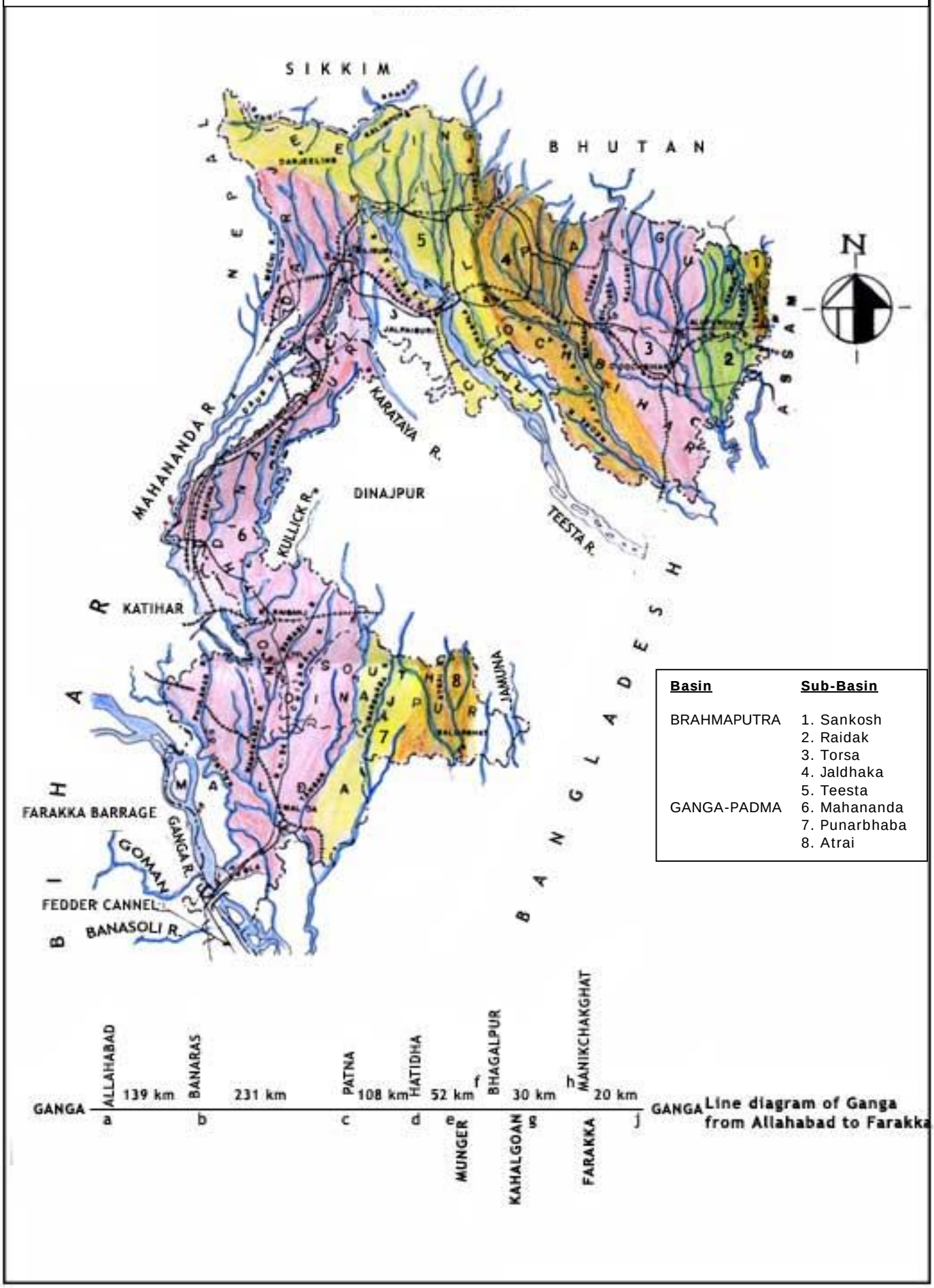
MARCH, 2014

ANNUAL FLOOD REPORT
OF
IRRIGATION & WATERWAYS DEPARTMENT
FOR THE YEAR 2013

INDEX

INDEX MAP OF RIVER BASINS OF NORTH BENGAL

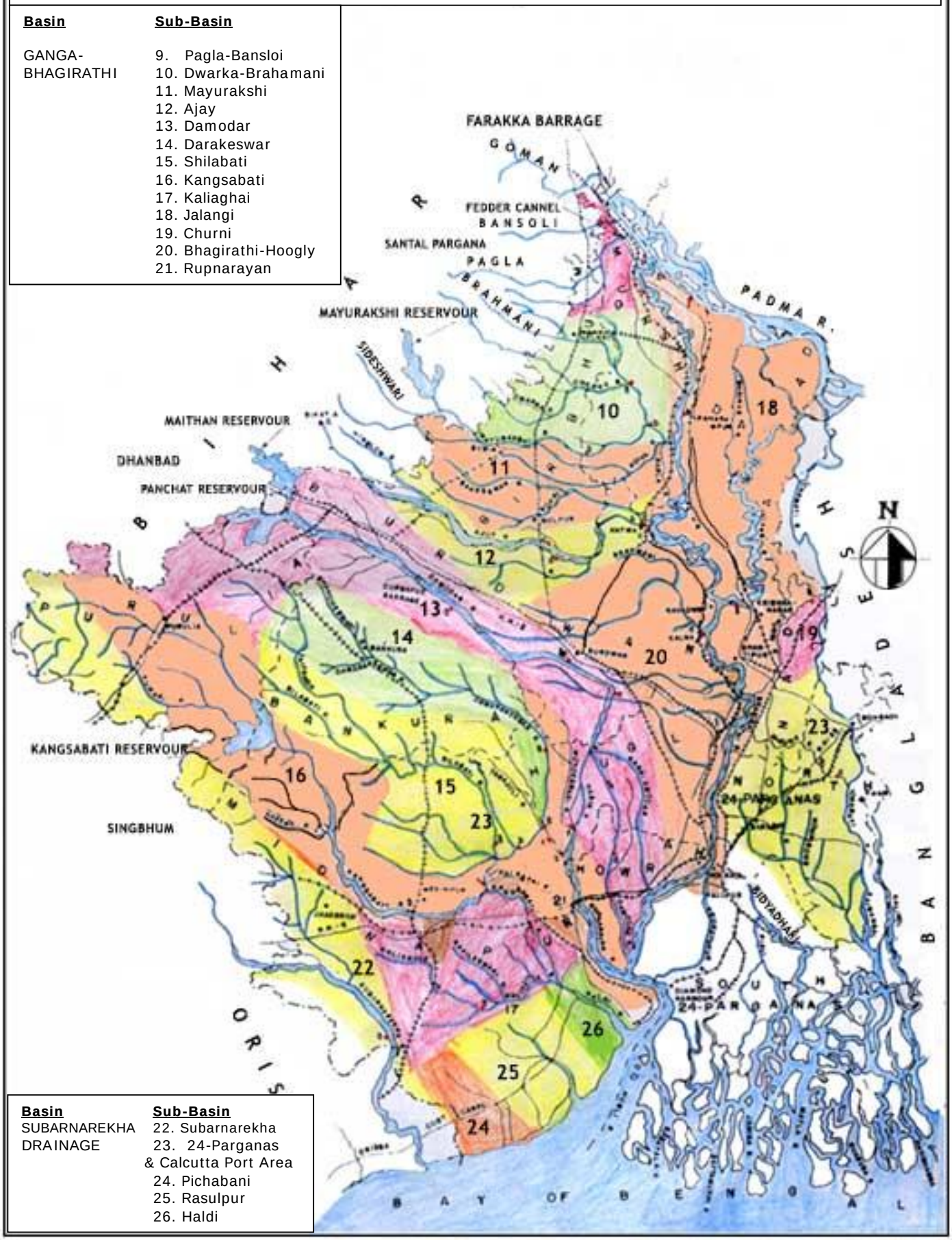


Basin	Sub-Basin
BRAHMAPUTRA	1. Sankosh
	2. Raidak
	3. Torsa
	4. Jaldhaka
	5. Teesta
GANGA-PADMA	6. Mahananda
	7. Punarbhaba
	8. Atrai

Line diagram of Ganga from Allahabad to Farakka

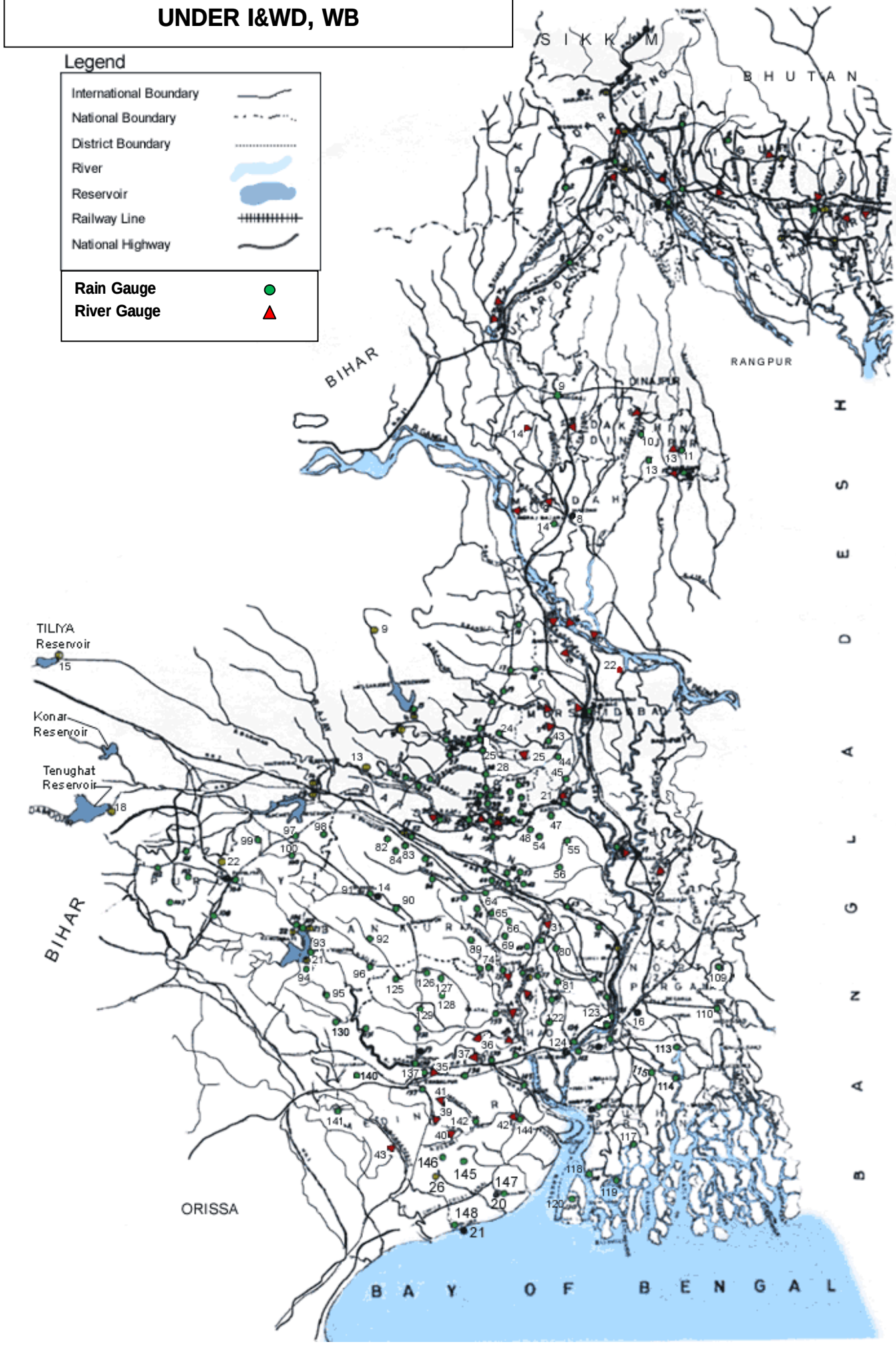
INDEX MAP OF RIVER BASINS OF SOUTH BENGAL

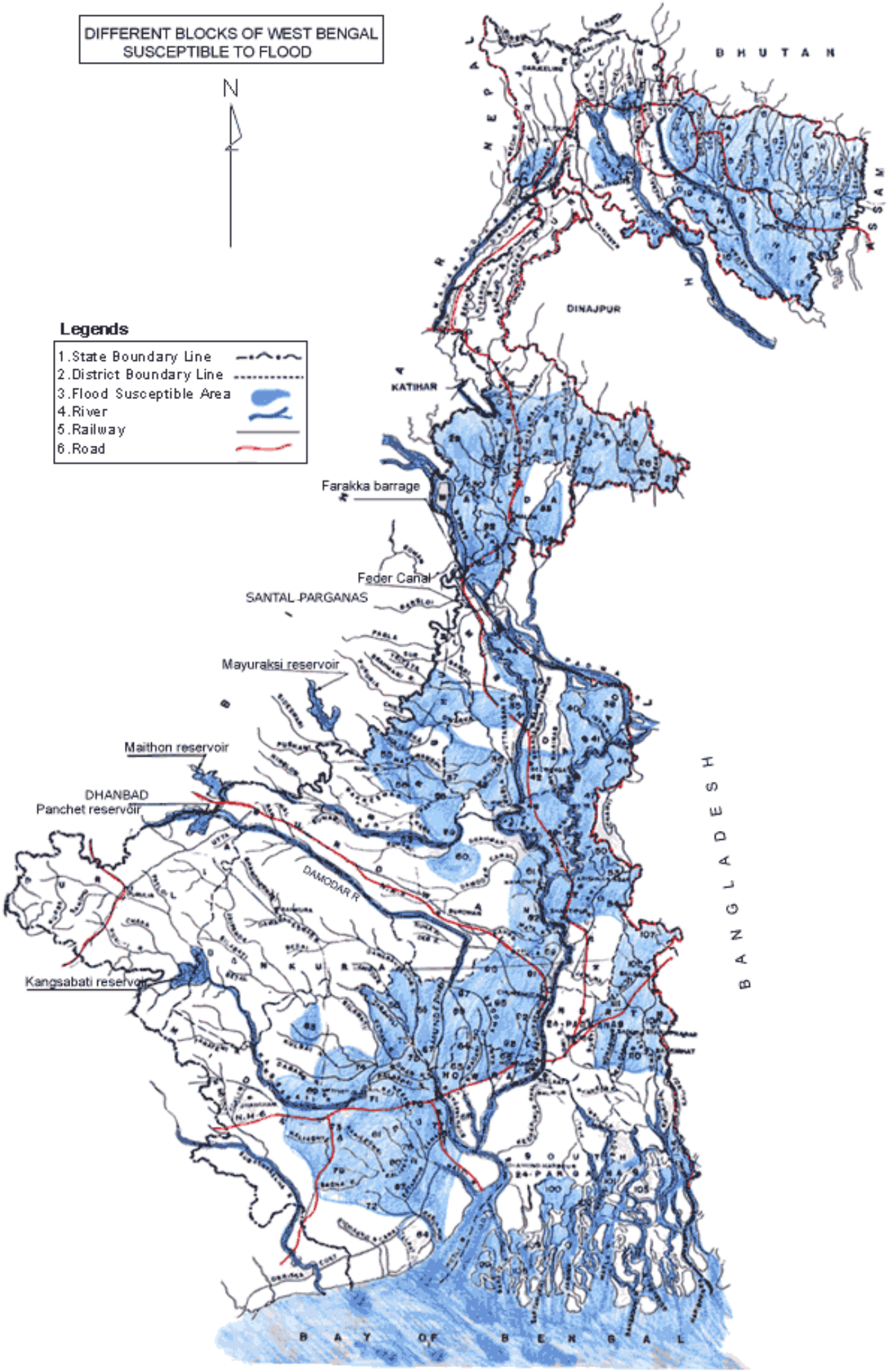
Basin	Sub-Basin
GANGA-BHAGIRATHI	9. Pagla-Bansloi
	10. Dwarka-Brahamani
	11. Mayurakshi
	12. Ajay
	13. Damodar
	14. Darakeswar
	15. Shilabati
	16. Kangsabati
	17. Kaliaghai
	18. Jalangi
	19. Churni
	20. Bhagirathi-Hoogly
	21. Rupnarayan



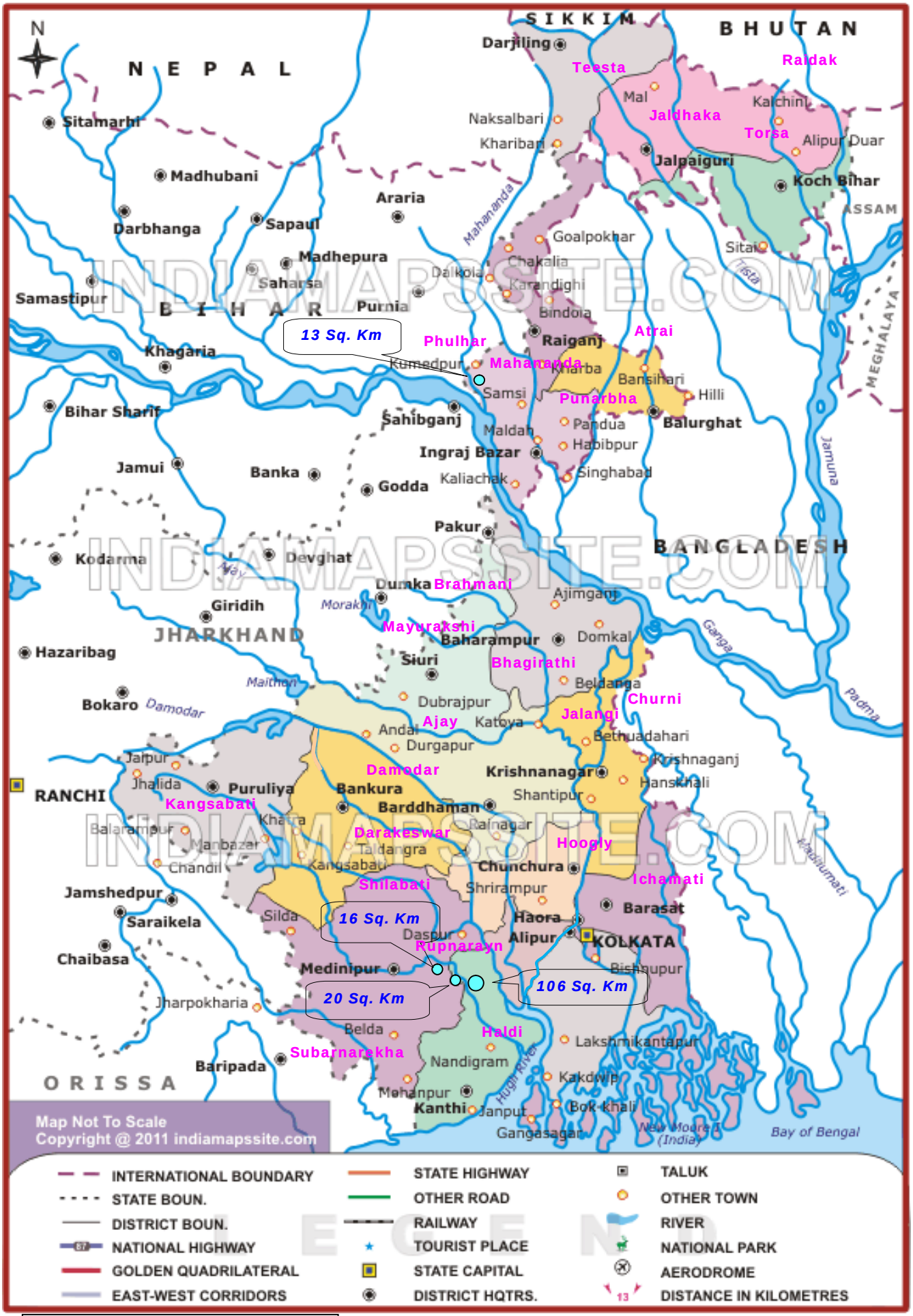
Basin	Sub-Basin
SUBARNAREKHA DRAINAGE	22. Subarnarekha
	23. 24-Parganas & Calcutta Port Area
	24. Pichabani
	25. Rasulpur
	26. Haldi

NETWORK OF RAIN AND RIVER GAUGES UNDER I&WD, WB




DIFFERENT BLOCKS OF WEST BENGAL
SUSCEPTIBLE TO FLOOD
N
Legends
1.State Boundary Line
2.District Boundary Line
3.Flood Susceptible Area
4.River
5.Railway
6.Road
BHUTAN
NEPAL
ASSAM
DARJEELING
DINAJPUR
KATIHAR
Farakka barrage
Feder Canal
SANTAL PARGANAS
Mayuraksi reservoir
Maithon reservoir
DHANBAD
Panchet reservoir
DAMODAR R
Kangsabati reservoir
BANGLADESH
BAY OF BENGAL

AFFECTED AREAS DURING FLOOD 2013 DUE TO BREACH IN THE RIVER EMBANKMANT



Location of affected areas :

PREFACE

The State of West Bengal is the lower most riparian State in the Ganga Basin and most of the rivers in the State originate from outside the state boundary and are of inter-state/international category. The State is quite often ravaged by destructive flood, even without any appreciable rainfall within the geographical limits of the State. Along with flood, various allied problems like bank erosion, drainage congestion, and cyclonic disaster accentuate the flood situation. The State, being 42.30% of its geographical area flood prone, happens to be one of the prime flood prone States in the country.

The flood, water related disaster in the state of West Bengal has been an annual feature. Some parts of the state are victims of onslaughts of flood each year resulting severe loss to standing crops, cattle and human properties. The state has all possible facets of flood, drainage, bank erosion, cyclonic storm ravages and associated problems. It has been noticed that the furies due to flood have increased during the last two decades.

Embankments in various districts of the State in general and Sundarban areas in particular are used as communication link, particularly during periods of calamity for safe passage of people and carrying relief materials. Disruption of such communication links leads livelihood activities almost to a grinding halt. Moreover, embankments, constructed either decades or century ago, are functioning as lifeline to the people of Sundarban since those prevent entry of high tidal water into the countryside where average ground level is substantially lower than the normal amplitude of high tide. Due to breach as well as washout of embankments major portion of the area becomes disconnected from basic facilities of life.

Many factors such as intensity and duration of rainfall, sedimentation in river bed, natural or manmade obstruction etc. play a role in the occurrence of flood. Study of these factors and evaluation of flood hazards every year for a given basin/sub-basin are indispensable for evolution of various flood management measures. Accordingly Irrigation & Waterways Directorate, at the end of each flood season, prepare annual flood report comprising rainfall patterns, rainfall in the districts, reservoir condition and major flood events of the year.

1. INTRODUCTION

The state West Bengal crowned by the mighty snow-white Himalayas in the North and frothy sea on the South is a combination of land varying from high regions in the north and partly high in the south west to the plains in the rest areas. The state is beset with extensive network of rivers, their tributaries, rivulets, jhoras , canals, tanks beels and low lying pockets of water bodies. With the Tropic of Cancer running across it, the state is situated between 21º31' & 27º13'14" North Latitudes and 85º45'20" & 89º53' East Longitudes. The geographical area of the state is about 88,752 sq.km. with a population density of 767 per sq.km. according to 2001 census.

West Bengal, a part of Bengal Delta, has a long recorded history of flood. Reason is, the landmass of the State was formed by the Ganga-Padma system of rivers through the delta building process of which flood being the main carrier of sediments, the bulk of fluvial deposit, in huge volumes. At present 42.3% of total area of the State is susceptible to flood. The highest affected area as recorded in 1978 is about 30,607sq.km.and in 2000 about 23,971 sq.km.

Ganges enters West Bengal near Rajmahal and then flows in a south-easterly direction. It divides into two near north of Dhulian in Murshidabad district. One branch enters Bangladesh as the Padma while the other flows through West Bengal as the Bhagirathi River and Hooghly River in a southern direction. The Bhagirathi is the main river in West Bengal which flows past some of the important cities like Murshidabad, Baharampur, Nabadwip, Chinsura, Chandannagar, Srirampur, Howrah, Kolkata, Diamond Harbour and Haldia. It releases its water into Bay of Bengal near Sagar Island in the South 24 Parganas

The Mayurakshi, Ajay, Damodar, Kangsabati, Rupnarayan and their tributaries which rise in the Western plateau and high lands flow eastwards through the different districts of West Bengal and joins the Bhagirathi on the right bank. The Mayurakshi, which is fed by tributaries Brahmani, Dwarka, Bakreshwar and Kopai joins the Bhagirathi near Kalna through river Babla, the Ajay, which rises in the hills of Jharkhand, being joined by the Kunur, flows down the plateau fringe, marking the boundary between Bardhaman and Birbhum districts joining it near Katwa and Damodar, with its small meandering distributaries, small streams, Khari, Banka and Behula joins the Bhagirathi near Uluberia. The Damodar known as the sorrow of Bengal, is now controlled after formation of the Damodar Valley Project. The

Dwarakeswar and Shilabati rivers join to form Rupnarayan and the Kangsabati and Keleghai rivers join to form the Haldi. The Rupnarayan and Haldi fall into the Bhagirathi in the Purba Medinipur district. The Subarnarekha river entering from Jharkhand and after flowing for a short distance in West Bengal re-enters into Orissa. These rivers carry plenty of water thus keeping the Bhagirathi river with optimum water throughout the year. The rivers along with water carry silt and sand eroded from the western plateaus and deposits them in the Bhagirathi and the rivers themselves. This silting is causing great inconvenience for the Kolkata Port and often results flooding in the years of heavy rain.

The distributaries of the Padma River like Bhairab, Jalangi, Mathabhanga river and their tributaries enters West Bengal and joins the Bhagirathi on its left bank. The Bhairab and the Jalangi meet and their joined course known as Jalangi falls into Bhagirathi. The Mathabhanga divides into branches namely; Churni and Ichhamati, The river Churni meets the Bhagirathi while the other flows southwards and joins the Kalindi. The Sunderbans region is covered by numerous estuaries and streams, mainly distributaries of main rivers. The rivers are interconnected and are fed by tidal waters. The major rivers of the area are Hoogly, Matla, Gosaba, Saptamukhi, Haribhanga, Piyali, Thakuran/ Jamira, Raimangal, Kalindi and Ichhamati.

The Teesta flows cutting deep gorges from north to south in the mountainous Darjeeling district, it enters the plains at Sevoke and flows in a mighty stream on straight line towards the south east until it drains its water into the Brahamaputra in Bangladesh. Torsa, Jaldhaka, Kaljani, Raidak, Sankosh and Mahananda rivers are in the northern hilly region which rise in the Himalayas and flow in a southerly direction through the districts of Darjeeling, Jalpaiguri, Cooch Behar and North and South Dinajpur and enters Bangladesh. As most of the rivers are snow fed, most of the rivers are perennial in nature and often floods during the rainy season. The entire region is made up of sand, gravel and pebbles laid down by these rivers. The Mahananda rises from the Dow Hills forest, near the town of Darjeeling and are fed by similar small rivers like, Mahanadi, Balason, and Mechi and runs in a zig-zag way through the district of Malda and joins the Padma in Bangladesh. In the central region, the main river is the Mahananda. The Tangon, Punarbhabha, and Atrai arises in the plains, while the former two joins together and flows into Mahanadi, Atrai flows into the Padma.

Classification of areas

1	Geographical Area	88,752 sq.km.
2.	Area under Forest	11,880 sq.km.
3.	Total Flood Prone Area	37,660 sq.km.
4.	Area already protected	22,005 sq.km.

1.1 RIVER BASINS

The state can be demarcated into three distinct drainage basins coming under the Ganga, Brahmaputra and Subarnarekha system respectively. These three main river basins can in turn be divided into Sub-bains having individual catchment of their own. The area-wise distribution of the above main basins in the state are as under:–

1.	Brahmaputra Basin	11, 860 sq.km.
2.	Ganga Basin including Sundarban Area	74, 732 sq.km.
3.	Subarnarekha Basin	2, 160 sq.km.

1.2 RIVER SYSTEM

1.2.1 Brahmaputra Basin Drainage System

The rainfall in the northern region of the state is generally high. The ground slope is steep, particularly in the Sub-Himalayan regions of the northern districts. Except Darjeeling, all the areas belong to Brahmaputra Basin. This system consists of a total area of 11,860 sq.km. nearly 14% of the geographical area of the state. This basin area is interspersed with a large number of drainage channels which join the main drainage arteries of the regions like the rivers Teesta, Torsa, Raidak, Mansai, Jaldhaka etc. All these rivers originate from the Himalayas in Bhutan/Sikkim and flow across the Terai region and reach the plains of West Bengal and then flow to Bangladesh joining ultimately the Brahmaputra in Bangladesh.

The rivers feeding the river Brahmaputra have number of tributaries as given in the following table:-

Sl. No.	River Basin	Catchment area in sq.km. (in West Bengal)	Tributaries
1.	**Sankosh**	172	Chiklajhore
2.	**Raidak**	807	Raidak-I, Raidak-II, Turturi
3.	**Torsa**	3419	Kaljani, Sil-Torsa, Char-Torsa, Dolong, Sanjai, Ghargharia, Garam, Diana, Pana, Jainti, Gabur-Basra
4.	**Jaldhaka**	3746	Mujnai, Murti, Diana, Sutanga, Dolong, Dharala, Ghatia, Kumlai, Gilandi, Duduya
5.	**Teesta**	3716	Great Rangeet, Ramam,Rangpoo, Mechi, Leesh, Ghish, Chel, Mal, Neora, Karala.

BRIEF DESCRIPTION OF RIVERS UNDER BRAHMAPUTRA BASIN

(A) SANKOSH

The river Sankosh with its origin in Bhutan is the eastern most river of Brahmaputra river basin. It serves as the boundary between the two states West Bengal and Assam. It joins with Raidak-II and finally falls into Brahmaputra in Bangladesh by name Gangadhar.

(B) RAIDAK

It originates in Mt. Akungphu at an altitude of 6400 m. in Bhutan. The river Raidak then bifurcates into two channels namely Raidak-I and Raidak-II at Bhutanghat, close to Indo-Bangladesh border. Raidak-I joins the united stream of Torsa and Kaljani, while Raidak-II is joined by Sankosh and finally outfalls into Brahmaputra in Bangladesh by the name Gangadhar.

(C) TORSA

The river Torsa originates in Chumbi Valley of southern Tibet at an altitude of 7065 M. It flows through Tibet, Bhutan, West Bengal and Bangladesh. Below Hasimara bridge on NH-31, it bifurcates into two channels viz. Sil-Torsa and Char-Torsa. They reunite at Patla Khowa forest. The river passes by the Coochbehar town and is joined by river Kaljani and Raidak-I. The combined flow outfalls into Brahmaputra near Nageswari at Rangpur in Bangladesh.

(D) JALDHAKA

The river Jaldhaka has its origin at Bitang Lake in Sikkim at an altitude of 4400 M. It flows through Sikkim, Bhutan, West Bengal and Bangladesh. After the river is joined by a number of streams and tributaries both in mountainous and sub-mountainous regions, it finally flows into river Dharala and the combined system, by the name Dharala ultimately outfalls into Brahmaputra in Bangladesh.

(E) TEESTA

Teesta – the mighty river of North Bengal originates in the glaciers of North Sikkim at an altitude of 6400 M and is formed by the union of two streams viz. Lachen and Lachung at Chungthung in Sikkim. It enters West Bengal at Rangpoo and upto Mechi, it forms the boundary betwen West Bengal and Sikkim. Two of its tributaries-Great Rangit and Rammam also serve as the natural boundary between the two states. The river finally outfalls into Brahmaputra in Rangpur district of Bangladesh.
Status of gauge stations over Brahmaputra are given below:-

River	Gauge Station	D.L	E.D.L	Remarks
SANKOSH	L.R.P. Crossing	48.50	49.40	
RAIDAK.	Raidak-I, L.R.P. Crossing	47.00	47.90	
	Raidak-II.L.R.P. Crossing	48.40	49.30	
TORSA	Hasimara	116.30	117.50	
	Kaljani/Alipurduar	45.100	45.700	
JALDHAKA	N.H. -31 Crossing	80.10	80.90	
	Diana/Chengmari	200.50	201.20	
	Mansai/Mathabhanga	47.700	48.200	
TEESTA	Coronation Bridge	150.00	153.60	
	Domohani	85.95	86.30	

1.2.2 GANGA BASIN

The two holy rivers – Bhagirathi and Alakananda originating from the glaciers of the Himalayas at an altitude of 7000 M. join at Dev prayag and the combined stream is known as the Ganga. It emerges into the plains at Rishikesh in Uttaranchal. After flowing exclusivelly through Uttaranchal and Uttar Pradesh it receives the flow of Yamuna, the largest tributary at Allahabad. The Ganga forms the boundary between Uttar Pradesh and Bihar for a length of about 110 km. and the river then enters Bihar and flows more or less through the middle of the state. After its confluence with the Kosi, the Ganga continues its eastward flows in Bihar for about 40 km. and then it enters West Bengal.

As it enters West Bengal, the river swings round the Rajmahal hill range and then starts flowing almost due south. The river then bifurcates into two arms about 40 km. below Farakka. The left arm called the Padma flows eastwards into Bangladesh while the right arm called Bhagirathi continues to flow south through West Bengal. The stretch of the river after Nabadwip is called Hooghly and ultimately outfalls into the Bay of Bengal near Sagar Island.

The Central, Southern and the South-Western parts of the State of West Bengal constitute the Ganga Basin.

The total length of the river Ganga from its point of origin to the point where it falls into sea is about 2575 km (measured along Bhagirathi and the Hooghly), of which 1450 km lies in Uttaranchal and Uttar Pradesh, 110 km along Uttar Pradesh and Bihar border, 445 km in Bihar and 570 km in West Bengal.

The Ganga system comprises a total area of 74,732 sq.km. within the state of West Bengal. The catchment areas of different rivers within this system in the state of West Bengal are as under :

Sl.No.	Name of River Sub-Basin	Catchment Area (sq.km.)	
		Total	Within West Bengal
1	2	3	4
(a)	Mahananda-Fulhar	19,890	9,640
(b)	Punarbhaba	3,960	730
(c)	Atrai	4,291	910
(d)	Pagla-Bansloi	2,094	730
(e)	Dwaraka-Bhrahmani	4,093	2,500
(f)	Bhagirathi-Hooghly	1,170	1,170
(g)	Jalangi		5,344
(h)	Mayurakshi-Babla	5,958	2,720
(i)	Ajoy	6,095	2,490
(j)	Khari-Gangur-Ghea	4,460	4,460
(k)	Churni	2,030	800
(l)	Damodar	22,362	5,250
(m)	Darkeswar	4,430	4,430
(n)	24-Parganas (South & North) and Kolkata Port Drainage Basin	4,619	4,619
(o)	Kangsabati	8,369	8,369
(p)	Shilabati	3,952	3,952
(q)	Rupnarayan	2,548	2,548
(r)	Kaliaghai	2,142	2,142
(s)	Haldi	980	980
(t)	Pichabani	820	820
(u)	Rasulpur	1,130	1,130
(v)	Tidal zone (Sundarban Area)	11,320	11,320
(w)	Subarnarekha	18,951	2,160

The different tributaries of these rivers are listed below:-

Sl. No.	Name of River	Tributaries		STATE	District
		Primary	Secondary		
1	2	3	4	5	6
1.	**Mahananda**			WB	Darjeeling, Uttar Dinajpur, Malda
				Bihar	Kishanganj, Purnia
		Balason	Rohini	WB	Darjeeling
		Lachka			
		Taipu	Manjha		
		Mechi		Bihar	Kishanganj
		Kankai	Ratwa		Araria, Purnia & Katihar
		Panar			
		Dauk		WB	Uttar Dinajpur
		Pitani	Bakuna		
		Nagar	Sudhani, Kulik		
		Chiramati			
		Sui			
		Tangon			Uttar & Dakshin Dinajpur, Malda
		Mora Mahananda			Malda
		Kalindri			
2.	**Fulhar**			Bihar	Katihar
				WB	Malda
3.	**Punarbhaba**	Punarbhaba		WB	Dakshin Dinajpur, Malda
4.	**Atrai**	Jamuna		WB	Dakshin Dinajpur
		Brahmani			
5.	**Ganga-Padma**	Pagla		WB	Malda
		Gumani			Murshidabad
				Jharkhand	Sahebganj
6.	**Bansloi**	Bagmari		Jharkhand	Sahebganj
				WB	Murshidabad
		Pagla		Jharkhand	Godda, Pakur
				WB	Birbhum, Murshidabad
			Buri	WB	Birbhum

Sl. No.	Name of River	Tributaries		STATE	District
		Primary	Secondary		
1	2	3	4	5	6
7.	**Dwarka**	Brahamani		Jharkhand	Dumka
				WB	Birbhum, Murshidabad
			Tripti	Jharkhand	Dumka
				WB	Birbhum
		Gambhira	Gamri		Birbhum, Murshidabad
		Chailan		Jharkhand	Dumka
				WB	Birbhum
		Ghormora			
		Kajuli			
		Daoka	Manikarnika		Birbhum, Murshidabad
		Banka			Murshidabad
8.	**Mayurakshi**			Jharkhand	Deoghar, Dumka
				WB	Birbhum, Murshidabad
		Dhabai		Jharkhand	
		Bhurbhuri			
		Bhurkunda			Deoghar, Dumka
		Siddeswari			Jamtara, Deoghar, Dumka
			Noonbeel		Deoghar
		Kushkorini			Jamtara
				WB	Birbhum
		Kopai		Jharkhand	Jamtara
				WB	Birbhum
			Bakreswar		
9.	**Kuiya**	Mayurakshi		WB	Murshidabad
		Kopai			
10.	**Babla**	Kuiya			
		Dwarka			
11.	**Ajay**			Bihar	Munger
				Jharkhand	Deoghar, Jamtara
		Dudhwa		Bihar	Munger
				Jharkhand	Deoghar

Sl. No.	Name of River	Tributaries		STATE	District
		Primary	Secondary		
1	2	3	4	5	6
	Ajay	Pathro, Jayanti		Jharkhand	Giridih, Deoghar
		Hinglow		Jharkhand	Jamtara
				WB	Birbhum
		Tumoni, Kunur			Burdwan
		Kana Ajay			Birbhum, Burdwan
12.	**Jalangi**	Silamari, Bhairab, Suti		WB	Murshidabad, Nadia
13.	**BHAGIRATHI**	Bansloi, Pagla, Babla, Ajay, Jalangi		WB	Murshidabad, Nadia, Burdwan
14.	**Damodar**			Jharkhand	Latehar, Chatra, Hazaribag, Ramgarh, Bokaro Dhanbad
				WB	Burdwan, Purulia, Bankura, Hooghly, Howrah
		Barakar		Jharkhand	Hazaribag, Giridih, Kodarma, Dhanbad
			Igra, Ushri, Dumohon		Giridih
			Barsoti		Hazaribag
		Barki			Latehar, Chatra, Hazaribag
		Haharo			Hazaribag
		Ghari			
		Bokaro			Hazaribag, Bokaro
		Konar			
			Siwani		Hazaribag
		Jamunia			Hazaribag, Giridih, Bokaro, Dhanbad
		Naikari, Bhera			Ranchi, Ramgarh
		Khanjo, Garga			Bokaro
		Gowai, Ijri			
		Khadia, Katri			Dhanbad
		Sali		WB	Bankura
		Singar, Tamal			Burdwan
		Nuna	Deb		

Sl. No.	Name of River	Tributaries		STATE	District
		Primary	Secondary		
1	2	3	4	5	6
15.	**Khari**	Brahmoni		WB	Burdwan
		Banka	Maya		
16.	**Gangur**				
17.	**Behula**				Burdwan, Hooghly
18.	**Ghea**	Julkia, Jhinki, Kedarmati, Ilsurah			Hooghly
19.	**Kunti**				
20.	**Saraswati**				Hooghly, Howrah
21.	**Kana Damodar**				
22.	**Churni**				Nadia
23.	**Ichhamati**				Nadia, North 24-Parganas
24.	**Bidyadhari**	Haroa, Bhanga			North & South 24-Parganas
25.	**Kalindi**				North 24-Parganas
26.	**BHAGIRATHI - HOOGHLY**	Khari, Gangur, Churni, Behula, Ghea, Kunti, Saraswati, Kana Damodar, Damodar			Hooghly, Howrah, Kolkata, North & South 24-Parganas
27.	**Mundeswari**	Harinkhola			Burdwan, Hooghly
		Kana Darakeswar			
28.	**Darakeswar**				Purulia, Bankura, Hooghly
		Futiary, Beko			Purulia, Bankura
		Gandheswari, Arkasha, Berai, Khukra			Bankura
		Shankari			Paschim Medinipur
			Amodar, Tarajuli		Bankura, Hooghly
29.	**Shilabati**				Purulia, Bankura, Paschim Medinipur
		Jaiponda			Bankura

Sl. No.	Name of River	Tributaries		STATE	District
		Primary	Secondary		
1	2	3	4	5	6
	Shilabati	Puratan, Champayan, Ketia		WB	Bankura, Paschim Medinipur
		Kubai	Tamal		Paschim Medinipur
		Donai, Parang, Katan			
30.	**Kangsabati**				Purulia, Bankura, Paschim Medinipur
		Saharjor, Bandhu, Patloi			Purulia
		Kumari	Hanumanta, Kerro, Chaka, Jam, Tatko		
		Bhairabbanki	Thiru		Bankura
		Tarapheni			Paschim Medinipur
		Kalaichu			
31.	**Old Cossye**				
33.	**Polaspai**				
32.	**Durbachati**				Paschim & Purba Medinipur
33.	**New Cossye**	Kherai			
		Bakshi			Purba Medinipur
34.	**Rupnarayan**	Darakeswar, Shilabati, Mundeswari, Durbachati			Paschim & Purba Medinipur, Howrah
35.	**Kaliaghai**				Paschim & Purba Medinipur
		Kapaleswari, Deuli			Paschim Medinipur
		Chandia			Paschim & Purba Medinipur
		Baghai			
36.	**Haldi**	Kaliaghai & New Cossye			Purba Medinipur
37.	**Rasulpur**				
38.	**Pichabani**				
39.	**Tidal Rivers of Sundarban**	Bidya, Raimongal, Matla, Thakuran, Saptamukhi, Raidighi, Muriganga etc.			South 24-Parganas

Sl. No.	Name of River	Tributaries		STATE	District
		Primary	Secondary		
1	2	3	4	5	6
40.	**SUBARNA-REKHA**			Jharkhand	Ranchi, Seraikela-Kharswan, Purba Shingbhum
				WB	Paschim Medinipur
				Odisha	Balasore
		Jhumur, Rupai		Jharkhand	Ranchi
		Rarhu	Kakro		
		Karru			
				WB	Purulia
		Kanchi		Jharkhand	Ranchi, Khunti
		Damra			Ranchi, Seraikela-Kharswan
		Korkari			Khunti, Ranchi, Seraikela-Kharswan
		Chinguru		WB	Purulia
				Jharkhand	Seraikela-Kharswan
		Kharkai		Odisha	Mayurbhanj
				Jharkhand	Seraikela-Kharswan, Purba Shingbhum
			Sanjai		Paschim Shingbhum, Seraikela-Kharswan
			Lli Gara, Torlo, Karanjia	Jharkhand	Paschim Shingbhum
			Khadkari, Bankabol, Kandria, Nusa	Odisha	Mayurbhanj
			Barhai	Jharkhand	Paschim Shingbhum
		Gurma, Singaduba			Purba Shingbhum
				WB	Purulia

Sl. No.	Name of River	Tributaries		STATE	District
		Primary	Secondary		
1	2	3	4	5	6
	SUBARNA-REKHA	Garra, Sankai		Jharkhand	Purba Shingbhum
		Kodia			
				Odisha	Mayurbhanj
		Dulung		WB	Paschim Medinipur
				Odisha	Balasore
		Khaijori		WB	Paschim Medinipur

BRIEF NOTES ON THE SUB-BASINS

A. MAHANANDA.

The river Mahananda originates from Ghoom near Darjeeling town in the district of Darjeeling. The Mahananda river system lies between latitude 25º15' N to 26º15' N and longitude 87º45' E to 88º15' E. It is bounded on the north by the Himalayas, in the east by the ridges separating it from Teesta river system, the river Ganga on the South and the Kosi river system in the east. The river bifurcates into two channels at Barsoi in Bihar. Out of the two branches one flows through Bihar by the name Fulahar and the other flows through West Bengal as Mahananda. The river Mahananda carrying the flow of four tributaries namely, Nagar, Kalindri, Tangon and Punarbhaba, drains into the river Ganga from the North-Western side at Godogarighat just downstream of the point where Ganga leaves the boundary of West Bengal.

Status of gauge stations over Mahananda are given below:-

River	Gauge Station	D.L	E.D.L	Remarks
MAHANANDA	Hill Curt Road	115.975	116.590	
	Sonapur	75.77	76.38	
	Jhawa	31.40	32.01	
	Dangraghat	35.65	36.26	
	Englishbazar	21.00	21.75	
	Sui/Pajol	27.43	28.00	
	Sui/Katchua	25.49	26.09	
	Tangon/Radhikapur	33.45	34.05	
	Tangon/Banshihari	25.60	26.21	
	Nagore/Makdampur	31 54	31.86	
	Kullick/Railway Bridge	31.20	32.69	
	Dauk/Chopra	69.46	70.07	

	Gamari / Itahar	26.82	27.41	
	Fulhar/Teljana (Protected)	27.43	28.35	
	Fulhar/Teljana (Unprotected)	26.82	27.43	

B. ATRAI-PUNARBHABA

Some rivers like Sahu, Neem, Talma, Chaoai, Panga originating from the high lands in districts of Jalpaiguri, meet together afterwards. This combined stream assumes the name Karotowa. It then enters Bangladesh by the name Atrai. The river Atrai then bifurcates into two channels namely Dheepa and Atrai. The Western Channel – Atrai re-enters West Bengal in South Dinajpur district covering a length of 40 km. in the state. It again enters into Bangladesh and ultimately outfalls into river Brahmaputra.

The Dheepa on the other hand taking a South – Westernly course enters Gangarampur P.S. in South Dinajpur district assuming the name Punarbhaba. Covering a length of about 40 km. in the district it touches the eastern boundary of Maldah district and finally enters Bangladesh. Further down, Punarbhaba meets the river Mahananda in Bangladesh.

Status of gauge stations over Punarbhaba are given below:-

River	Gauge Station	D.L	E.D.L	Remarks
PUNARBHAVA	Gangarampur	25.82	26.42	
ATRAI	Balurghat	23.15	23.76	

C. NAGAR-KULICK, GAMARI-CHIRAMATI, TANGON, KALINDRI

All these rivers flow through the districts Malda and North Dinajpur. In course of their flow, somewhere they form the boundary either between West Bengal and Bihar or between West Bengal and Bangladesh. These rivers ultimately outfall into the river Mahananda.

Nagar, originating in Bangladesh flows along the boundary of West Bengal and taking a South-easternly course, receives a spill channel of Mahananda and is joined by Kullick, which has also its origin in Bangladesh. Gamari and Chiramati are two small rivers that flow through North Dinajpur district before they are united. This combined stream finally outfalls into the river Mahananda.

Tangon is a tributary of river Mahananda. It rises in Bangladesh. It flows through the district of North Dinajpur and Malda and meets Mahananda on the boundary of Malda and Bangladesh.

River Kalindri originating in North Bihar flows through the plain of Purnia district. It enters West Bengal in the Malda district and outfalls into Mahananda.

D. PAGLA-BANSLOI-BRAHMANI

These rivers originate from the Rajmahal hills in the district of Bihar. Flowing easternly across Birbhum district, they entered Murshidabad district as the tributaries of the river Bhagirathi.

Status of gauge stations over Pagla-Bansloi & Brahmoni are given below:-

River	Gauge Station	D.L	E.D.L	Remarks
PAGLA-BANSLOI	Bansloi	31.85	32.76	
BRAHMONI-DWARKA	Brahmani/ADB Road Crossing	33.00	33.40	
	Dwarka/Sankoghat	20.40	21.30	
	Ranagram	17.36	17.86	

E. JALANGI-BHAIRAB

The river Jalangi originates from the right bank of the river Padma in Murshidabad district, 165 km. downstream of Farakka. Jalangi is dead for all purposes except during the periods of rain, when it receives water from Padma. The river ends its journey by finally outfalling into the river Hooghly near Nabadwip town in Nadia district in West Bengal.

The river Bhairab starts its journey from the river Ganga in P.S. Lalbag of Murshidabad district. It is now almost a dead channel but during rainy season it receives water from Padma.

Status of gauge stations over Jalangi is given below:-

River	Gauge Station	D.L	E.D.L	Remarks
JALANGI	Swarupganj	8.44	9.05	

F. ICHAMATI-CHURNI

The river Mathabhanga originates from the mouth of the Jalangi of Padma. It is not an important river in this stage, as it flows mainly through

Bangladesh. It flows only a few kilometers within the district of Nadia. At this stage, the river bifurcates into two streams – the eastern course runs a few kilometres through the districts in a south-east direction to meet Bhagirathi by the name Churni and the other course flows by the name Ichamati. Ichamati gets a little supply from Padma and thrives on wash out by tidal flows.

Status of gauge stations over Ichamati & Jamuna are given below:-

River	Gauge Station	D.L	E.D.L	Remarks
Ichamati	Mejdia	7.82	8.43	
	Bongaon	5.075	5.675	
Jamuna	Gaighata	3.90	4.50	
	Gobardanga	3.77	4.37	

G. BHAGIRATHI-HOOGHLY

The Ganga Brahmaputra Meghna river system constitutes one of the largest river systems of the world in terms of its water resources. The river Ganga originating in the Himalayas in India, drains a vast area. Near its deltaic head at Farakka it divides into two channels, the Bhagirathi-Hooghly and the Padma. The Bhagirathi-Hooghly flows through West Bengal and outfalls in Bay of Bengal and the Padma crosses over into Bangladesh and joins the Brahmaputra at Goalundo.

The river Bhagirathi divides the Murshidabad district into two parts. It receives three right bank tributories namely the Bagmari-Pagla, the Mayurakshi and the Ajoy. It receives the Jalangi just upstream of Nabadwip town from the left. After its confluence with the Jalangi, the Bhagirathi is known as the Hooghly.

The Bhagirathi-Hooghly is the main river in the state and is the main drainage artery for the southern districts draining almost the entire area. Before 12th century, the Ganga had its main course down Bhagirathi-Hooghly. Subsequently, the main flow was pushed to the east through the present course of Padma. The flow of Bhagirathi increases downstream due to the run off and outflows receives from a number of eastern and western tributaries. It also forms the boundary between 24-Parganas and Hooghly districts.

Status of gauge stations over Bhagirathi are given below:-

River	Gauge Station	D.L	E.D.L	Remarks
BHAGURATHI-HOOGHLY	Jangipur	20.27	20.88	
	Berhampore	17.22	17.83	
	Katwa	13.71	14.32	
	Kalna	7.63	8.24	

H. MAYURAKSHI-BABLA

Mayurakshi originates from the high lands of Santhal Parganas. It is the main river of Birbhum district. Several spill channels – the Manikornika, Kana Mor, Gambhira etc. take off from the Mayurakshi in its lower reaches. All these rivers flow into the lower pocket of Hijal Beel in the district of Murshidabad. From the Beel, the river Babla starts its journey finally draining into the river Bhagirathi. The drainage and flood level in the Hijal Beel is considerably influenced by the level rulling in the Bhagirathi.
Status of gauge station over Mayurakshi during the rainy season is given below:-

River	Gauge Station	D.L	E.D.L	Remarks
MAYURAKSHI	Narayanpur	27.99	28.79	

I. AJOY

The river Ajoy originates from the hills near Deoghar in Jharkhand. The Principal tributaries of the river are - Hinghlow, Kunoor, Pathro and Jayanti. The floods of this river are flashy and of short duration. There are some pockets in the Ajoy-Kunoor catchment which suffer from frequent inundation. Large areas of Burdwan and Birbhum districts face inundation whenever floods of the Ajoy coincides with that of the Mayurakshi, the Pagla, the Bansloi and the Bhagirathi.

Status of gauge stations over Ajoy during the rainy season are given below

River	GaugeStation	D.L	E.D.L	Remarks
AJOY	Sikatia	165.64	166.24	
	Katwa	14.48	15.04	
	Gheropara	39.416	40.416	
	Budra	39.426	40.341	

J. DAMODAR

The river Damodar originating from Palamau hills in Jharkhand and bifurcates into two channels at Beguahana. The main flow passes through Mundeswari channel and discharges into Rupnarayan. The other one Amta channel carries discharge during high flood and outfalls into the Hooghly. The river causes floods in its lower reaches in the districts of Burdwan, Hooghly and Howrah, mainly on the right bank of the river below Beguahana..

Status of gauge stations over Damodar during the rainy season are given below:

River	Gauge Station	D.L	E.D.L	Remarks
DAMODAR	Randia	52.134	52.893	
	Edilpur	32.790	32.950	
	Jamalpur	23.237	23.542	
	Amta	5.640	6.240	
DAMODAR	Champadanga	12.890	13.500	
	Mundeswari/Harinkhola	12.800	13.410	

K. DWARAKESWAR-SILABATI-RUPNARAYAN

Dwarakeswar originates from the high lands of Purulia district. River Ganddheswari rising from Bankura district meets Dwarakeswar near Bankura town receiving water from streams like Arkasha, Berai, enters Hooghly district and meets Silabati to form Rupnarayan.

Silabati also originates in Purulia district. It traverses through the district of Midnapore. The river receives water of Joypanda and meets with Dwarakeswar to form Rupnarayan.

Rupnarayan is a combination of number of streams. The tidal reach below confluence of Dwarakeswar and Silabati is known as Rupnarayan. It outfalls into Hooghly after receiving mainflow of Damodar through Mundeswari and branch of Kangsabati. The river is tidal throughout its entire course.

Status of gauge stations over Dwarakeswar-Silabati & Rupnarayan during the rainy season are given below:

River	Gauge Station	D.L	E.D.L	Remarks
DWARAKESWAR	Arambag	17.220	17.830	
	Shakepur	11.750	12.350	
SILABATI	Gadghat	8.990	9.600	
	Banka	15.080	15.690	

RUPNARAYAN	Bandar	6.850	7.460	
	Ranichak	5.330	5.940	
	Gopiganj	5.030	5.650	

L. KANGSABATI-KALIAGHAI-HALDI

The river Kangsabati originating from Purulia district is joined by Kumari in Bankura district. Further down, it is joined by the combined streams of Bhairab Banki and Tarafeni rivers and thereafter it flows through the Midnapore district. After a tortuous course, it bifurcates. The upper branch known as old Cossye or Palaspai Khal outfalls into the Rupnarayan and the other one is known as New Cossye.

The river Kaliaghai trickles out from Jhargram, P.S. in Midnapore district. During the course of its journey, it is fed by the flow of its tributaries namely Kapaleswari, Baghai and Chandia. This combined flow meets the other arm of Kangsabati i.e. New Cossye to form Haldi.

The river Haldi formed by joining of New Cossye and the combined flow of Kaliaghai outfalls into the river Hooghly. The lower portion of the river Haldi is affected by over bank spills and drainage problem during the monsoon.

Status of gauge stations over Kangsabati & kaliaghai during the rainy season are given below:

River	Gauge Station	D.L	E.D.L	Remarks
KANGSABATI	Mohanpur (Cossye)	25.750	26.360	
	Kalmijole (Old Cossye)	9.290	9.900	
	Panskura (New Cossye)	9.290	9.900	
KALIAGHAI	Bakhrabad	8.40	8.85	
	Dehati	6.55	7.00	
	Amgachia	5.79	6.400	
	Kalipandap	5.00	5.60	

M. RASULPUR

The river Rasulpur is formed by three streams namely Bagda, Sarpai and Madhakhali. It is the main river of Contai Sub-Division of Midnapore district. It acts as the main drainage for Dwarakeswar, Silabati and large portion of the Kangsabati rivers. It causes flooding in two regions namely Dubda and Contai areas. The river ultimately falls into the river Hooghly.

N. TIDAL RIVERS OF SOUTHERN WEST BENGAL

Apart from the rivers described earlier within the Ganga and the Brahmaputra river systems, there is a group of rivers in Southern part of the State which falls in the deltaic zone. These rivers mostly lie in the deltaic zone to the east of the Hooghly river popularly known as Sundarbans and form an intricate network with a number of criss-cross inter connecting channels, thus dividing the land spill channels of Ganga, then upland supply running dry, during winter months. But gradually their off-takes from Ganga have deteriorated and in some cases being cut-off from the river. Now these rivers drain off whatsoever fresh discharge comes from country sides, thus ultimately draining into Bay of Bengal through one or other of the principal estuaries in the area which are, starting from Hooghly river successively the Bartala of Muriganga or channel creek, Saptamukhi, Matla, Gosaba, Hariabhanga, Raimongal etc.

The Tolly's Nullah or the Adi Ganga, as it is sometimes called is a small but important tidal creek draining into the Hooghly from the left in the vicinity of the city of Kolkata.

1.2.3 SUBARNAREKHA BASIN

The river Subarnarekha though it has small catchment within this state, has got seperate entity as it directly falls into the Bay of Bengal. Originating in the Chhotonagpur Range at an elevation of 609.00 M it traverses through three states – Jharkhand, West Bengal and Orissa. It drains a total area of 18,951 sq.km. of which 13,590 sq.km. in Jharkhand, 2,160 sq.km. in West Bengal and 3201 sq.km. in Orissa. The main tributaries of the river are Kanchi and Kharkai above Chandil in Jharkhand, and Dolong in West Bengal.

Status of gauge stations over Subarnarekha during the rainy season are given below:

River	Gauge Station	D.L	E.D.L	Remarks
SUBARNAREKHA	Gopiballavpur	45.50	46.50	
	Bhasraghat	**HFL**	24.25	
	Sonakonia	16.150	16.750	

2. RAINFALL

Due to its physical and geographical position, the state, apart from diverse characteristics like physical, topographical has climatological variations as

well. The average rainfall in the state is 1750 mm, of which more than75% occurs during the monsoon period while the hilly region at the foot hills receives the heaviest rainfall ranging from 2500 mm to 5000 mm, the southern districts in the plains receive average of 1125 mm to 1875 mm. The main rainfall season in this state is the South-West monsoon season during which the entire land (excepting the extreme north, the extreme north-east and extreme south) gets 75% of the annual rainfall. The gangetic plains of West Bengal get 78% of its annual rainfall during the monsoon period. During last seventy five years, the date of onset of monsoon over West Bengal was spread between last week of May to last week of June with its withdrawal between last week of September to second week of October.

2.1 RAINFALL PATTERN

The river Ganga divides the state into two parts, which are by and large homogeneous from the meteorological point of view. The northern half is designated as 'Sub-Himalayan West Bengal' and the southern half as 'Gangetic West Bengal'. Sub-Himalayan West Bengal is more susceptible to heavy rains both in respect of amount as well as in frequency of occurance. Very heavy rain is more frequent in first two months (June and July) than in subsequent, in the Sub-Himalayan West Bengal. In Gangetic West Bengal the frequency is maximum in August followed by June, July and September in that order.

On the basis of rainfall distribution, the state can be divided into two broad zones –

(i) The Himalayan and Sub-Himalayan Region,
(ii) The Gangetic Plains.

2.1.1 HIMALAYAN AND SUB-HIMALAYAN REGION.

The Himalayan and Sub-Himalayan Region comprising the districts-Darjeeling, Jalpaiguri, Coochbehar and Northern part of Islampur Sub-Division of Uttar Dinajpur district of high intensity of rainfall from 2000 mm. to over 4000 mm. about 80% of which is found to occur during monsoon season. On the average Darjeeling, Coochbehar and Jalpaiguri get 114, 112, 110 rainy days respectively in a year. The monsoon generally follows a northernly track to ultimately break up against Eastern Himalaya causing very heavy rainfall and thereafter trough of low pressure under break monsoon conditions. It then shifts northwards to the Himalayan foothills. It has been found that a precipitation to the tune of 200 to 300 mm. in two

hours is not unusual while in more than forty occasions of rainfall of 250 mm. and above have been registered during 1891-1965.

2.1.2 GANGETIC PLAINS

The gangetic plains which constitute the major portion of the state, can be further sub-divided into the following three sectors on the basis of average rainfall –

Sector – I : Comprising districts – Bankura, Burdwan, Hooghly, Nadia and Purulia which receive an average rainfall – between 1140 mm and 1400 mm.

Sector – II : Comprising districts – Birbhum, Midnapore, Murshidabad and North 24-Parganas having an average annual rainfall between 1400 mm and 1650 mm.

Sector – III : Comprising districts – Howrah and South 24-Parganas having an average annual rainfall – between 1650 mm and 1900 mm.

Such regional variations in the precipitation pattern causes flood conditions from time to time.

For the country as a whole, the rainfall for the season (June-September) was 106 % of its long period average (LPA). But the same was 72% of its LPA over Northeast (NE) India.

Though in West Bengal the seasonal rainfall during June-September period were: -3% in June, -17% in July, +15% in August & -18% in September; it was the bountiful rainfall in October that made up all the deficits. In October West Bengal rainfall was +149% of the normal, whereas in the South Bengal-Ganga Basin districts the rainfall was +186% of the normal. Off course a major part of this October rainfall was due to PHAILIN. About 20% of the seasonal rainfalls of this year for the districts of Bankura, Purulia and Midnapur districts were occurred due to PHAILIN effect in the second week of October.

The monthly, annual, monsoon period rainfall data for the districts as collected from Indian Meteorological Department, Alipore, Kolkata are shown in separate annexure from RF-1 to RF-4.

Gauge levels of important rivers during the monsoon period of 2013 along with relevant graphs are given in Annexure from G-1 to G-26.

Reservoir levels along with flood discharge from Kangsabati Dam during monsoon period are given in annexure K-I to K-2.

3. FLOOD SEASON 2013

IMD rainfall data reveals that during monsoon, 2013 South Bengal received 19.90 % excess precipitation than normal while 11.40 % less than normal precipitation occurred in North Bengal. District wise rainfall data in monsoon with respect to annual rainfall are given in the following tables.

Average Monthly Rainfall Data of West Bengal for the year 2013

DISTRICT	MONSOON		ANNUAL	
	Actual	Normal	Actual	Normal
Bankura	1686.70	1156.40	2134.90	1330.90
Birbhum	1158.60	1211.10	1374.10	1392.80
Burdwan	1290.00	1128.50	1534.80	1315.20
East Midnapore	1908.90	1417.20	2152.40	1669.60
Hooghly	1201.70	1170.00	1364.40	1418.70
Howrah	1690.00	1310.50	1849.80	1600.00
Kolkata	2268.40	1436.40	2445.30	1709.20
Murshidabad	1000.40	1205.60	1229.80	1391.10
Nadia	1081.70	1055.20	1287.00	1261.60
North 24-Parganas	1522.70	1303.70	1836.80	1559.80
Purulia	1418.70	1186.00	1778.60	1363.30
South 24-Parganas	2037.90	1771.00	2301.20	2088.00
West Midnapore	1664.50	1272.60	1951.30	1535.50
SOUTH BENGAL	**1533.09**	**1278.78**	**1787.72**	**1510.44**
Coochbehar	2055.10	2878.90	2448.50	3443.70
Darjeeling	2377.60	2559.20	2981.10	3118.50
Jalpaiguri	3006.60	2912.80	3473.80	3463.30
Malda	1111.20	1219.80	1238.10	1419.40
North Dinajpur	1394.30	1485.20	1579.90	1727.60
South Dinajpur	996.50	1298.40	1170.40	1584.90
NORTH BENGAL	**1823.55**	**2059.05**	**2148.63**	**2459.57**

*** Source IMD**

Flood report of different river basins of West Bengal which have experienced flood during monsoon, 2013 is furnished in the following section.

A. Kangsabati Basin: This year during last week of May i.e. before the start of the flood season, the river Cossye and New Cossye experienced flood situation, where some low lying areas in Debra block of West Midnapore district and Panskura-I block (approximate area of inundation is 20 sq. km) of East Midnapore district were inundated due to breaches occurred in the right embankment of river Cossye and left embankment of river Bakshi respectively.

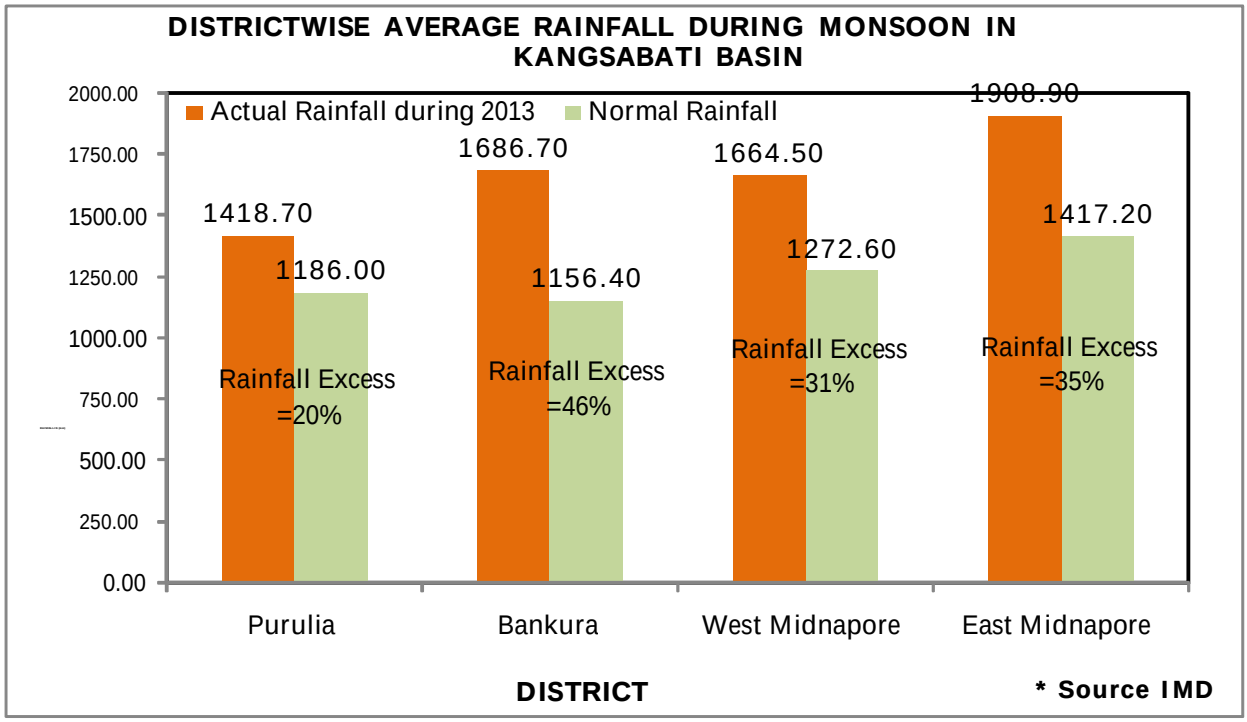
Water level in the river Cossye suddenly reached EDL at Medinipur Anicut due to huge run-off from uncontrolled catchment (area 2485 Sq. Km) of lower Kangsabati basin in West Midnapore district. Run-off from upper catchment (area 3625 Sq. Km) of Kangsabati basin was intercepted by the Kangsabati reservoir at Mukutmanipur, Bankura and such absorption had caused historic rise of water level in the reservoir to RL 418.90 ft on very 1st day of June'2013.

The rainfall excess during the month of May'2013 is given below.

DISTRICT	Rainfall (mm) during May,2013		
	Actual	Normal	Excess
Purulia	294.10	57.30	413%
Bankura	324.40	66.90	412%
West Midnapore	218.90	107.60	103%
East Midnapore	200.30	108.10	85%

*** Source IMD**

The district wise average rainfall of Kangsabati Basin during monsoon, 2013 is presented in the following figure.



There was excess rainfall in each month in each district and it is pertinent to be mentioned here that in the month of October, rainfall excess attained maximum due to the influence of Super Cyclone **"PHYLINE"** as shown in the following table.

DISTRICT	Rainfall (mm) during October,2013		
	Actual	Normal	Departure
Purulia	434.60	91.50	375%
Bankura	398.00	105.20	278%
West Midnapore	391.70	106.50	268%
East Midnapore	479.10	196.90	143%

*** Source IMD**

Flood hydrographs of river New Cossye and Old Cossye is given in Page No. G18 which shows that apart from early flood of May, 2013 the Kangsabati system had encountered another five flood spells on 30th July to 1st August, 22nd August to 26th August (resulting a breach in left bank of river New Cossye in Panskura, East Midnapore, approximate area of inundation is 42.34 sq. km), 4th to 6th October, 15th to 17th October (PHYLINE) and the last one from 27th to 29th October.

As a result of plenty of rainfall in the upper catchment and resulting high inflow, time to time release of flood water had been inevitable from the Kangsabati reservoir and quantum of flood discharge in different spells against the total monthly flood inflow is given in the table below.

KANGSABATI RESERVOIR					
Month	Total Monthly Inflow (Acre-ft)	Total Monthly Release		Period of Flood Release	Total Monthly Outflow (Acre-ft)
		Irrigation (Acre-ft)	Flood (Acre-ft)		
1	2	3	4	5	(3+4)
June	113824	Nil	Nil		Nil
July	284163	63547	11935	25.07.2013	75482
August	663213	151397	299504	21.08.2013 to 26.08.2013	450901
September	419363	155322	28168	05.09.2013 to 06.09.2013	183490
October	538170	163936	522787	01.10.2013 to 29.10.2013	686723
TOTAL	**2018733**	**534202**	**862394**		**1396596**

Peak flood release of 55,000 cusecs was recorded on 14th October, 2013 for this reservoir. Index Map showing the Kangsabati basin is given in Figure 1 below.

B. Shilabati and Darakeswar Basins: Catchment areas of the two rivers are situated in Purulia, Bankura and West Midnapore districts. The flood hydrographs of both the rivers have been presented in Page No. G15 & G16. It is obvious that there was no significant flood passing through river Darakeswar this season rather river Shilabati received five spells of high flood discharge similar to Kangsabati basin. Some low lying areas within Ghatal and Chandrakona blocks suffered periodic water logging during the entire season without any major damage. Index Maps of Shilabati and Darakeswar basins are shown in Figure 2.

C. Kaliaghai Basin: This basin is situated in West and East Midnapore districts. The flood hydrographs of river Kalighai and its tributaries namely Kapaleswari and Chandia have been given in Page No. G19 to G21.

Flood hydrographs of river Kaliaghai reveal that during the entire flood season water level crossed EDL eight times at Bakhrabad (Poktapol), five times at Dehati and only once at Amgechia. The locations of these gauge stations are given in the Index Map (Ref: Figure 3).

Although the river basin had received excess rainfall during entire flood season but frequency as well as run-off intensity have gradually reduced as the river Kaliaghai flows downwards from Poktapol to Amgechia. For example, there was a sudden jump of 3.12 m in the gauge at Bakhrabad from that of the previous day so that the flood peak attained the season's highest of RL 10.72 m against EDL 8.85 m on 30th July'2013.

The same flood when reached to the next gauge station at Dehati situated 19.50 km downstream, the observed rise was only 1.20 m and the effect of rise further reduced to only 0.95 m at Amgechia, situated 16.0 km downstream of Dehati. Possible factors of such reduction in flood frequency and intensity might be attributed to the implementation of ongoing project "Kaliaghai-Kapaleswari-Baghai Basin Drainage Scheme".

Similar conclusion could also be drawn from the flood hydrographs of the river Kapaleswari and Chandia where water level never crossed EDL. No major damage or incident of water logging has been reported for this basin.

E. Dwarka-Brahamani Basin: Flood hydrograph of river Dwarka at Sankoghat, Murshidabad is given in Page No. G12. This system has received only three nos. moderate flood spells in the month of August and October but water level never crossed DL 20.40 m. The gauge attained season's maximum of 20.26 m on 16th October under the influence of PHYLINE. No report of major damage or inundation was received from this basin. Index Map of this basin is presented in Figure 4.

Figure 1: INDEX MAP OF KANGSABATI BASIN

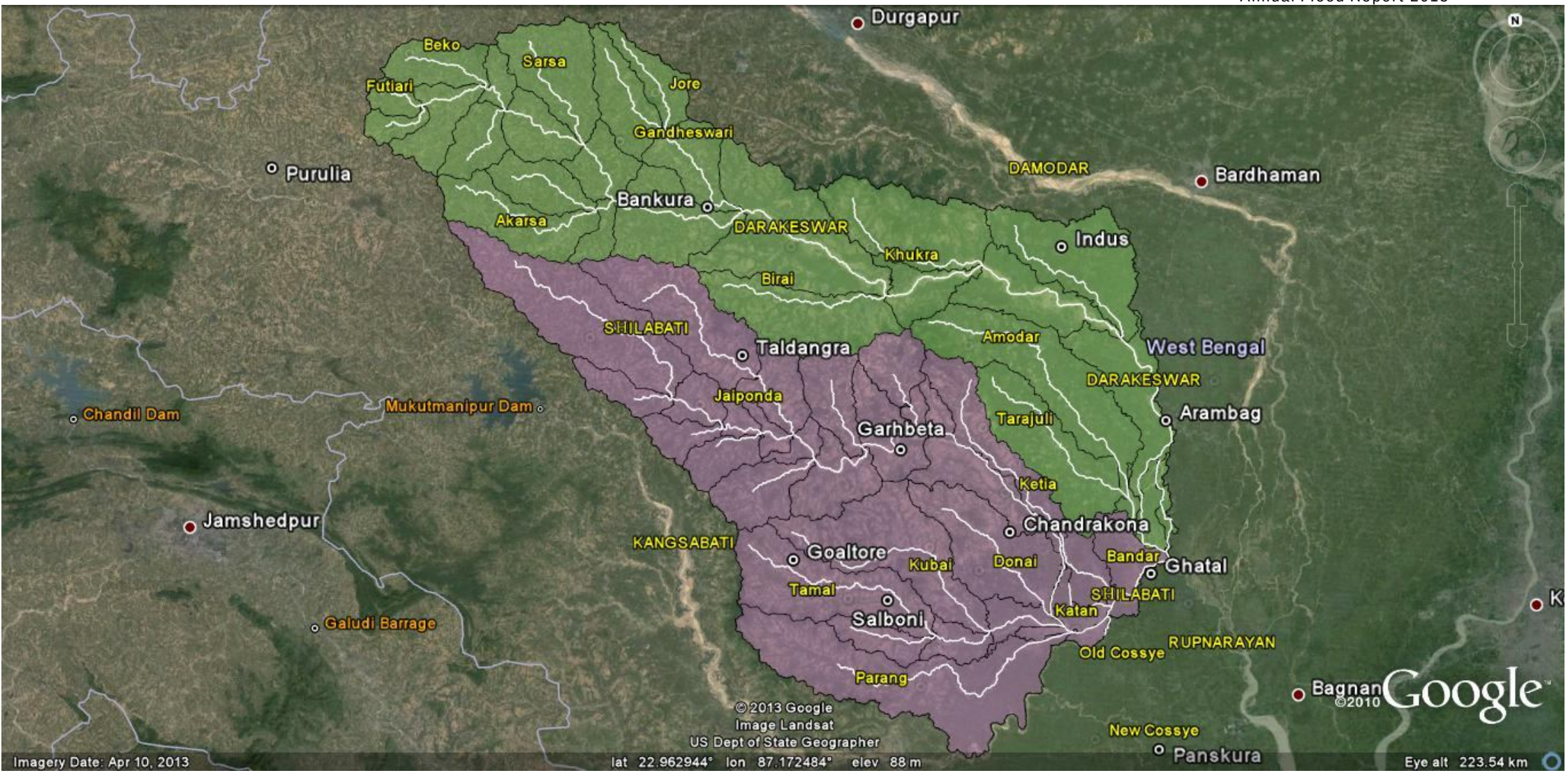


Figure 2: INDEX MAP OF SHILABATI-DARAKESWAR BASIN

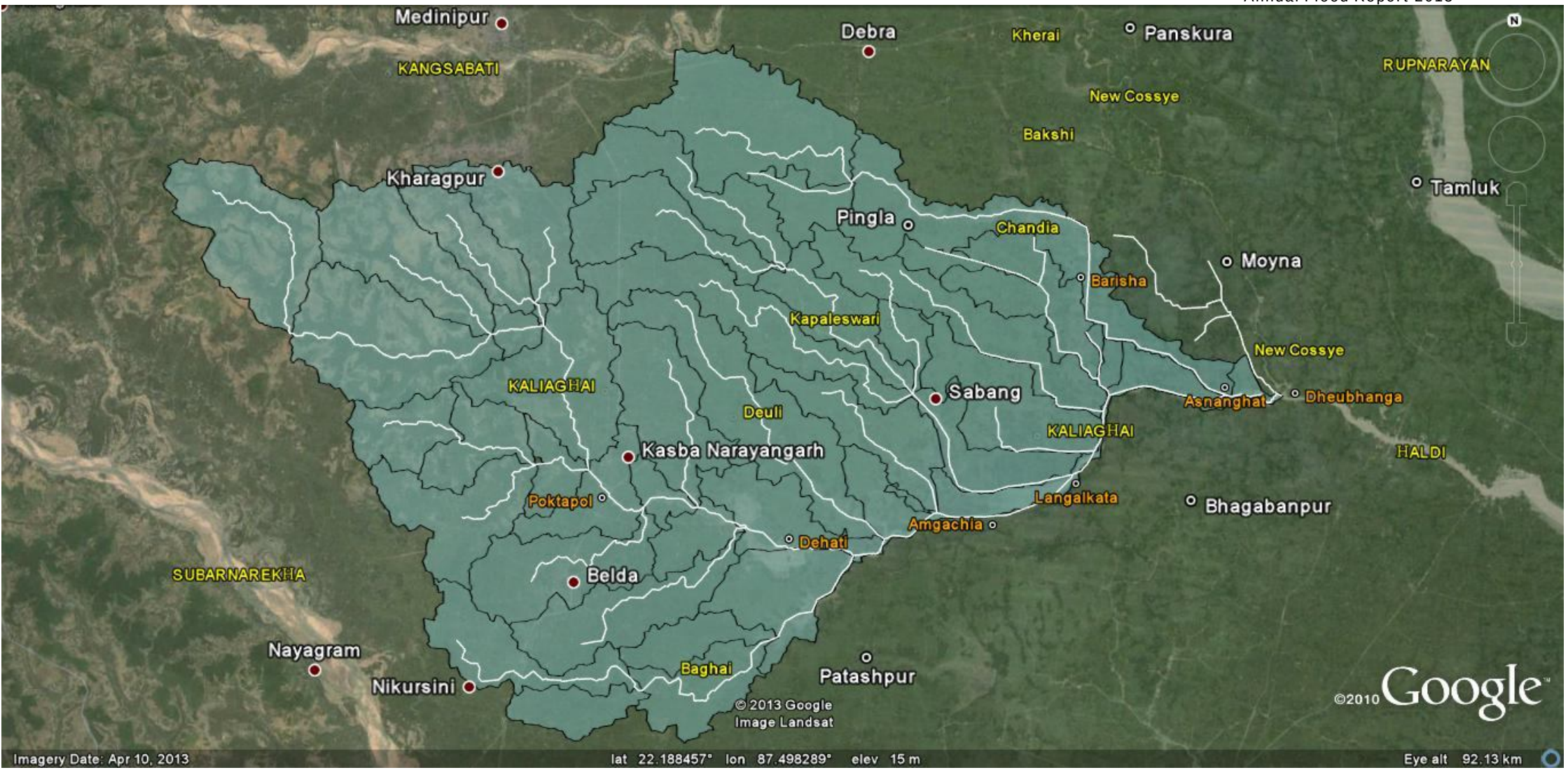


Figure 3: INDEX MAP OF KALIAGHAI BASIN

F. Mayurakshi Basin: Similar to Ajay river basin, there was hardly any flood passed through river Mayurakshi. The yield from upper catchment of Massanjore dam, Dumka during this flood season was substantially absorbed within the live storage capacity of the reservoir so that on 31st October the reservoir level attained RL 393.70 ft against the maximum level of RL 398.0 ft. The inflow-outflow data is given in the table below.

MAYURAKSHI RESERVOIR				
Month	Total Monthly Inflow (Acre-ft)	Total Monthly Release		Total Monthly Outflow (Acre-ft)
		Irrigation (Acre-ft)	Flood (Acre-ft)	
1	2	3	4	(3+4)
June	27679	Nil	Nil	Nil
July	17716	Nil	Nil	Nil
August	109043	22220	Nil	22220
September	192162	28168	Nil	28168
October	114189	Nil	Nil	Nil
TOTAL	**460789**	**50388**	**Nil**	**50388**

The flood hydrograph of river Mayurakshi at gauge station Narayanpur, Murshidabad is given in Page No. G12. The Index Map of Mayurakshi-Babla basin is shown in Figure 5.

G. Ajay Basin: This season no significant flood spell passed through river Ajay. The water level recorded at different gauge stations of this river never crossed DL. During the spell of PHYLINE, river gauge at Gheropara, Birbhum reached season's maximum level at 38.80 m against DL 39.42 m on 15th October. On the same day the gauge of 13.60 m was recorded against DL of 14.48 m at Katwa, Burdwan (Ref: Page No. G13).

The Ajay river basin is shown in the Figure 6.

H. DVC System: During monsoon, 2013 the lower catchment of Damodar basin had experienced one moderate flood spell in the month of August and one major flood after PHYLINE without any significant damage except incidences of periodic normal inundation of the low lying pockets situated within the spill zones of river Damodar in Khanakul and Udaynarayanpur block of district Hooghly & Howrah respectively.

The flood frequency curves in two gauge stations of lower Damodar basin are presented in Page No. G14.

Unprecedented rainfall during PHYLINE in the upper catchment areas of Damodar within the State of Jharkhand and consequent release of flood water from the different reservoirs under DVC system resulted significant

downstream discharge from Durgapur Barrage. The maximum flood release of 1, 63, 250 cusecs was recorded on 15th October from Durgapur barrage due to which the river gauge at Champadanga and Amta crossed EDL on the next day. The recorded gauge level at Champadanga on 16th October was 13.93 m against EDL 13.50 m and at Amta, this value was 6.56 m against EDL 6.24 m.

Index Map of Damodar basin is given in Figure 7.

I. Subarnarekha Basin: Flood hydrographs of river Subarnarekha for three gauge stations in West Midnapore district have been given in Page No. G22 & G23. During the flood season of 2013, river Subarnarekha had experienced two spells of high flood situations one in the month of August (from 20st to 24th August) and other in October due to effect of 'PHYLINE' (from 13th to 15th October).

The major portion of run-off discharge in Subarnarekha river was the contribution from uncontrolled catchment upstream of Ex-Galudi barrage. The total flood release from Chandil dam (i.e. controlled catchment of Ex-Galudi barrage) was only 30% of the total discharge passing through Ex-Galudi barrage during monsoon, 2013.

The peak run-off discharges passing through Ex-Galudi barrage at 8.00 am was 2, 54, 940 cusecs on 21st August, 2013 and 2, 52, 538 cusecs on 14th October' 2013.

The hydrograph of river Subarnarekha depicts corresponding high flood levels at gauge station Sonakonia. The river gauge reached EDL at 16.75 m on 22nd August, 2013 and crossed EDL to attain the season's highest of 17.50 m on 15th of October, 2013. Although the quantum of flood passing through the Ex-Galudi barrage was almost same for both the incidents, but in the case of second flood due to the effect of 'PHYLINE', there was considerable contribution from catchment area of river Dulung, a major tributary on the left bank of river Subarnarekha. An Index Map of Subarnarekha basin is given above.

No major damage occurred due to flood of Subarnarekha river in West Bengal, except some temporary inundation of low lying areas in Gopiballavpur, Nayagram and Jhargram blocks.

Index Map of Subarnarekha basin is given in Figure 8.

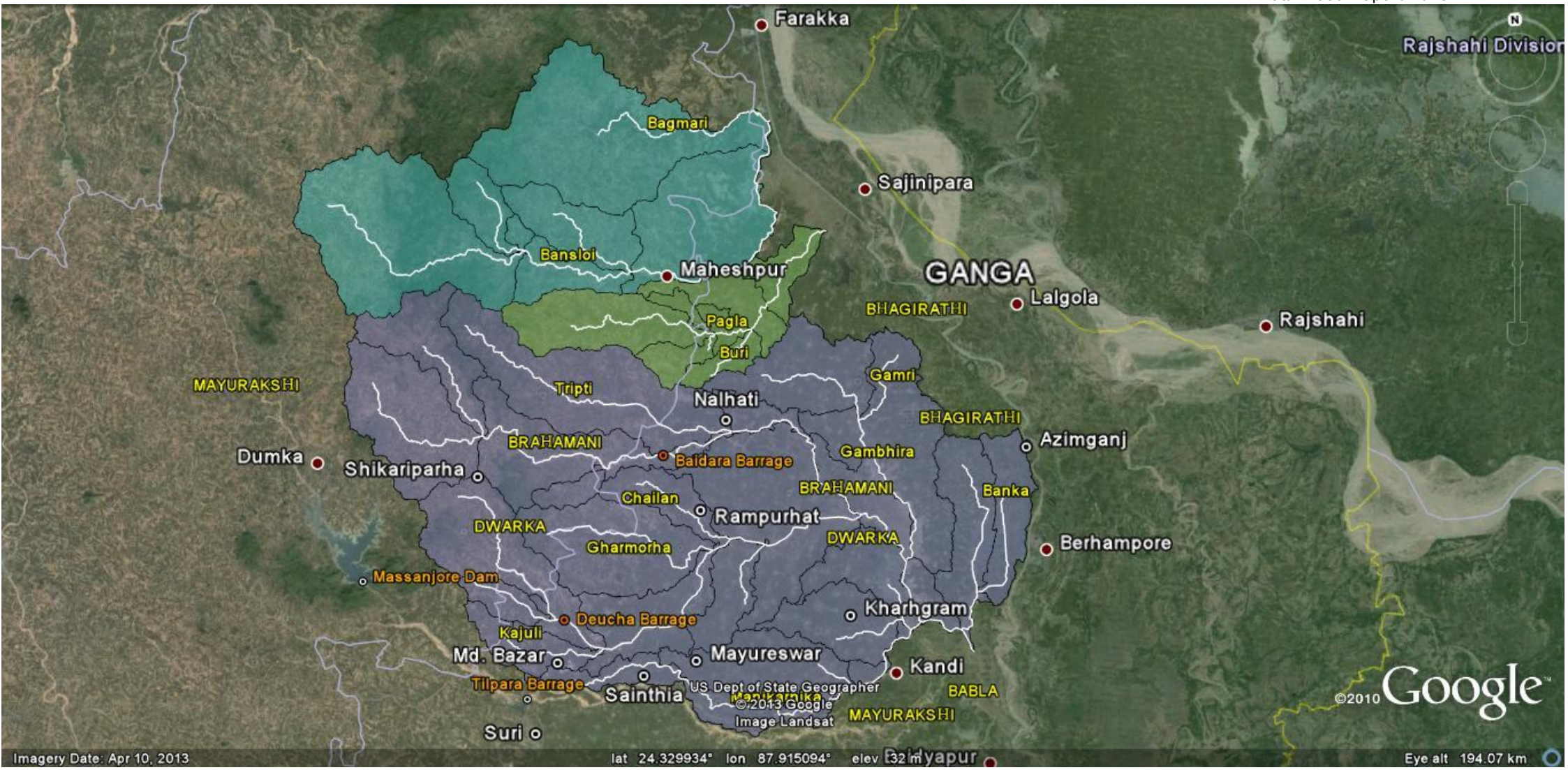


Figure 4: INDEX MAP OF DWARKA-BRAHMANI & PAGLA-BANSLOI BASIN

Figure 5: INDEX MAP OF MAYURAKSHI BASIN

Figure 6: INDEX MAP OF AJAY BASIN

Figure 7: INDEX MAP OF DAMODAR BASIN

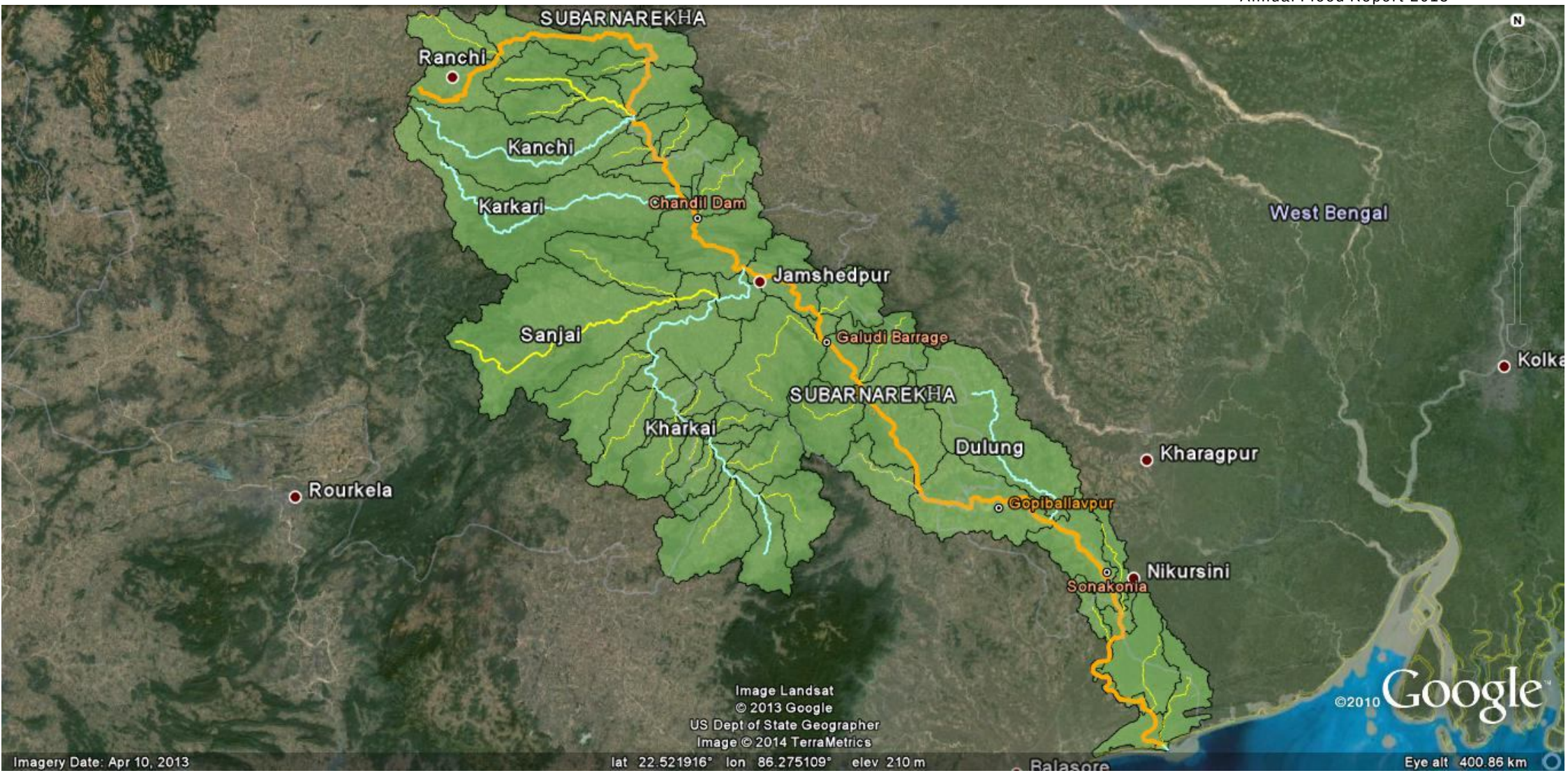


Figure 8: INDEX MAP OF SUBARNAREKHA BASIN

J. River Basins of North Bengal

I. Teesta-Jaldhaka-Torsa-Raidak

As North Bengal received 11% less rainfall than the normal therefore these basins did not experience heavy floods during monsoon, 2013. No major damage or water logging due to inundation in the lower basin areas had been reported. River gauges at most of the stations were below DL/EDL. The flood hydrograph of major rivers have been given in Page No. G1 to G5.

Index Map of the above basins is given in Figure 9.

II. Mahananda-Fulhar

The flood hydrographs for the two basins are given in Page No. G6 & G7. Due to heavy rainfall in the catchment areas situated in Bihar, both the rivers experienced prolonged flood spells in the months of July, August and September. One major damage i.e. a breach occurred in the ring bundh of left embankment of river Fulhar on 7th August for which approximately 13.0 sq. km area of Harishchandrapur-II blocks of district Malda got inundated.

Index Map of the above basins is given in Figure 10.

III. Atreyye-Tangan-Punarbhaba Basins

The flood hydrographs are given in Page No. G8 & G9. Both the rivers experienced one major flood spell (between 10th to 16th July) and another moderate flood spell (between 16th to 18th July). No major damage except a small breach was reported in the right embankment cum village road of river Punarbhaba in Bamangola block of Malda district.

Index Map of these basins is presented in Figure in Figure 11.

IV. Ganga Basin

Hydrographs of river Ganga and Ganga-Padma are given in Page No. G10 & G11. Water level of Ganga at gauge station Manichakghat showed the incident of prolonged flood spell above EDL 24.99 m continuously from 3rd August to 11th September with a highest flood peak of 25.95 m on 6th September. No major damage occurred for this high flood.

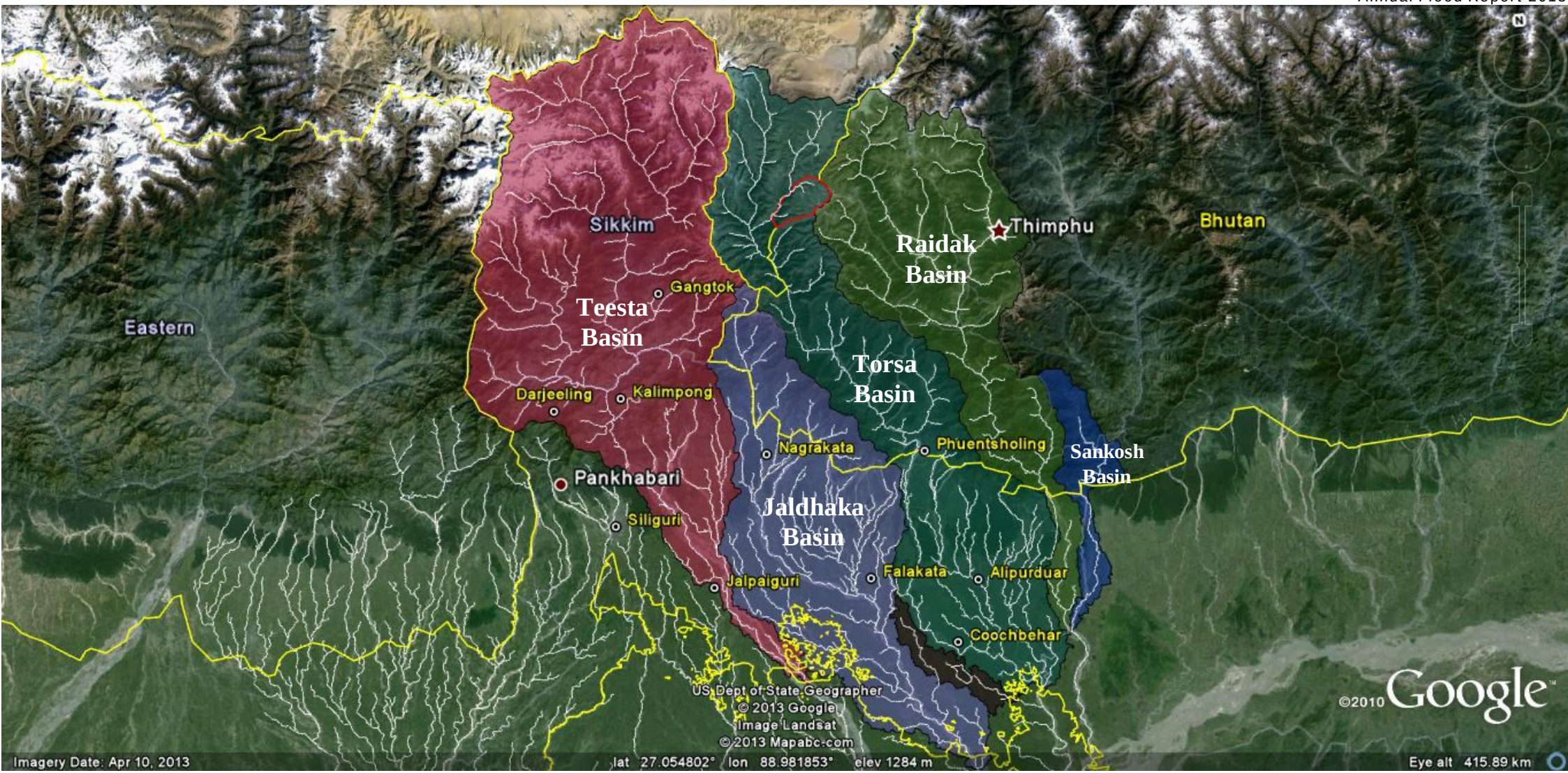


Figure 9: INDEX MAP OF TEESTA-JALDHAKA-TORSA-RAIDAK BASINS

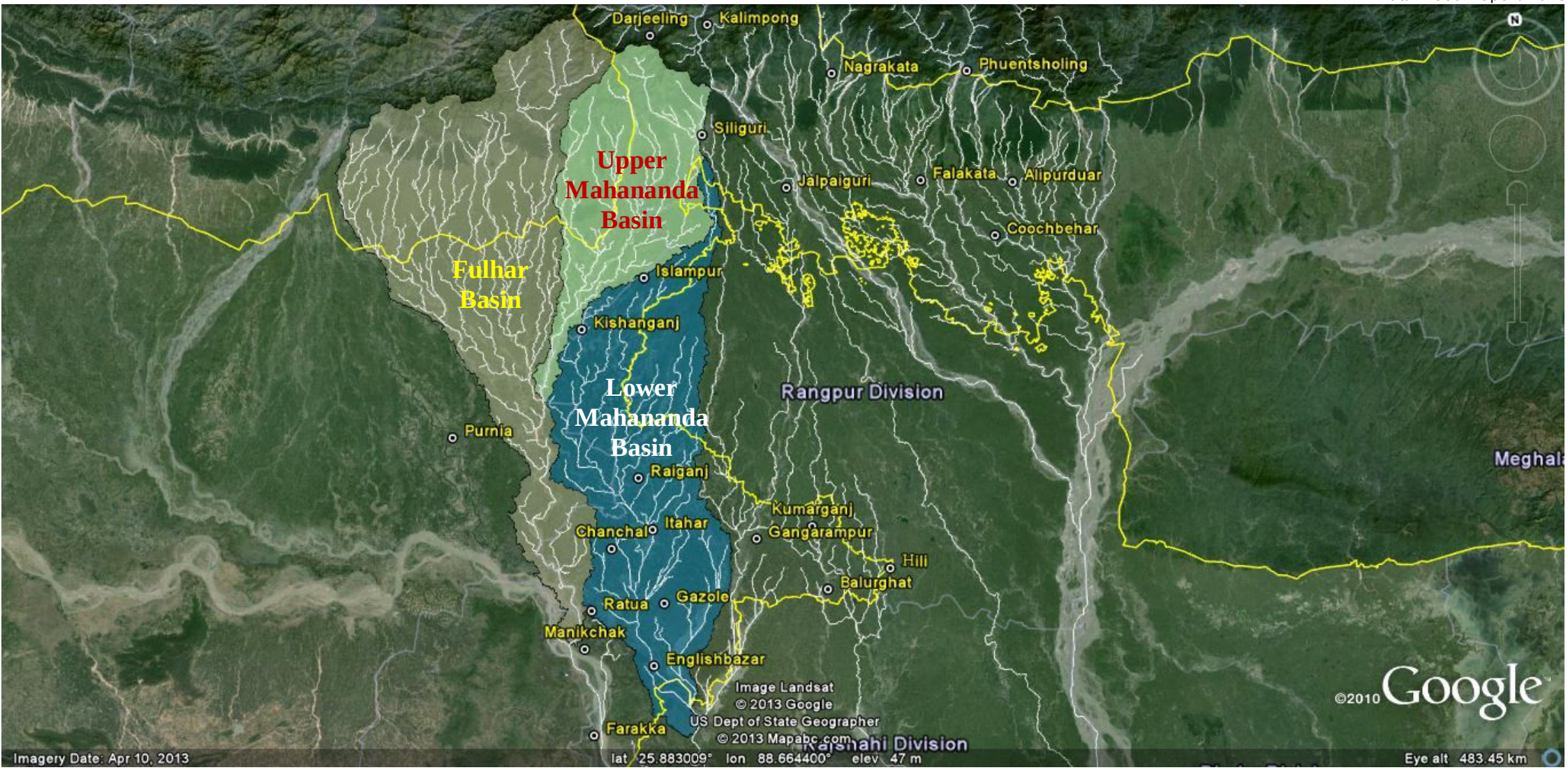


Figure 10: INDEX MAP OF MAHANANDA-FULHAR BASINS

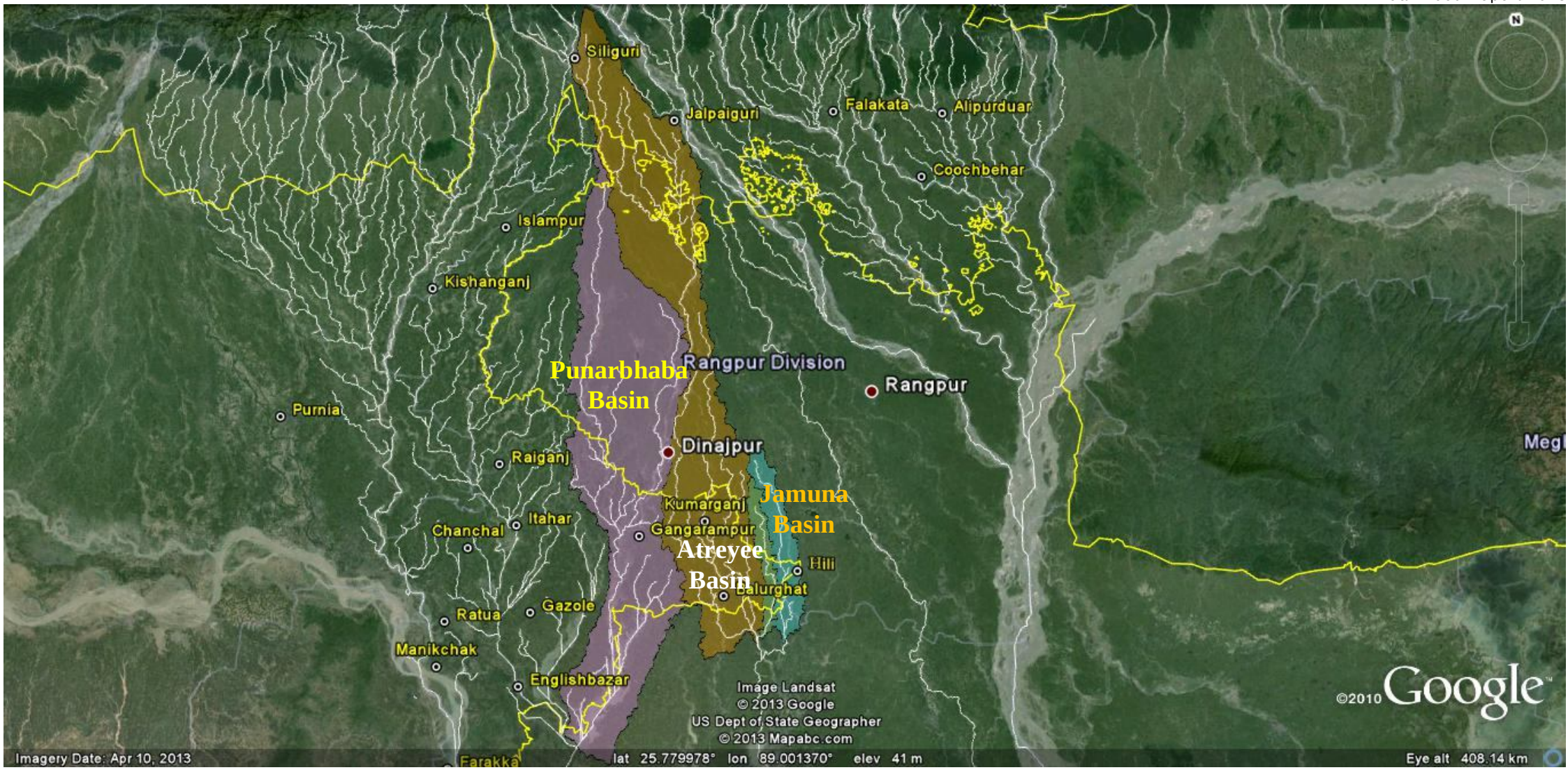


Figure 11: INDEX MAP OF ATREYEE-PUNARBHABA BASINS

4. CONCLUSION

The West Bengal is basically recipient of run-off generated outside the state. The state has typical basin characteristics. In the north the rainfall is high and the ground slope is steep mainly in the Sub-Himalayan region. The rivers in the Terai region are wide with shallow depth. Due to continuous denudation of forest cover, Dolomite mining in the hills, the silt loads are continuously deposited in the river beds, reducing the carrying capacity of the rivers causing the flood. In the South & Central Region heavy rainfall and run-off coming from the upper catchment cause drainage congestion and inundation due to very flat ground slope of the regions.

Main structural measures of flood control in West Bengal are embankments measuring 10000 km. (approx.) spread over different river systems, constructed over the years. There are major dams across the Kangsabati river, the Mayurakshi river and the Damodar river system. But only in the Damodar river system moderation of the dams during the peak flood is possible to some extent. The other structural measures like catchment area treatment and afforestation in upper catchment require intervention at Government of India level as they are outside the state.

In North Bengal, an elaborate flood warning system maintained by the department warns the people about the trend of rise of the rivers and thus alarms them to take necessary safety measures. In Central & South Bengal the water level of different rivers together with their danger & extreme danger levels and releases from different dams and reservoirs are intimated to different authorities from time to time during rainy season. Besides, the department also continuously maintains contact with Indian Meteorological Department, Kolkata and the IMD web-site to get information on adverse weather condition during the monsoon period and to take possible measures. Central Water Commission also extends their co-operation in supplying the conditions and trends of important river conditions in addition to rainfall data at different rain gauge stations.

Besides the department has already opened its own website (*www.wbiwd.com*) to make available daily rainfall data and river gauge levels with trend at different stations.

The flood management of the state is a critical problem. The problem cannot be tackled by the state government alone. It requires close liaison with different organizations. The flood awareness, particularly understanding about the complexity of the causes of flood and vulnerability of West Bengal will require help of NGO's and Panchayet Raj Institutions. The flood is a problem to be admitted by the society and the people of an

area are to formulate their own action plan in close liaison with different Government organizations.

Due to the cyclone PHAILIN in the second week of October, South Bengal districts of West Bengal have experienced unprecedented rainfall.

Some spells of very heavy rainfall in the uncontrolled catchments of rivers in the State have made a few periodic inundations at some places in Purba Midnapur district of South Bengal.

Overall rainfall was conducive for irrigation activities in the State, as the reservoir capacities of the dams were nearly full at the end of October.

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West Bengal district wise monthly rain fall statistics for the year 2013

Months	January			February			March		
Rainfall in mm	Actual	Normal	% dep	Actual	Normal	% dep	Actual	Normal	% dep
BANKURA	0.9	12	-93	15	18	-17	17.3	22	-21
BIRBHUM	1.8	13.4	-87	14.5	16.1	-10	0.7	21.2	-97
BURDWAN	6.8	10.7	-36	17.5	22.2	-21	3.9	19.8	-80
EASTMIDNAPORE	1	15.9	-94	5.2	18.6	-72	2.2	31.8	-93
HOOGHLY	2.1	11.9	-82	8.9	26.6	-67	1.5	28.2	-95
HOWRAH	5.8	12.2	-52	9.6	24.9	-61	4.8	32	-85
KOLKATA	12.2	14.4	-15	9.9	24.7	-60	1.2	33.5	-96
MURSHIDABAD	0	16.8	-100	1	11.2	-91	2.1	19	-89
NADIA	6.3	12.2	-48	9.1	17.6	-48	0.6	21.1	-97
NORTH 24 PARGANAS	4.3	15.6	-72	10.1	17.8	-43	27.2	30.3	-10
PURULIA	0.7	14.3	-95	13.8	20.7	-33	4.2	24.6	-83
SOUTH 24 PARGANAS	2.8	13.6	-79	6.8	26.7	-75	4	37.9	-89
WEST MIDNAPORE	0.2	12.2	-98	10.8	24.1	-55	4.5	39	-88
COOCH BEHAR	0	8.9	-100	16.5	16	3	2.6	32.2	-92
DARJEELING	7.3	48.3	-85	24.5	33.8	-28	37.2	57.7	-36
JALPAIGURI	1.3	9.2	-86	13.8	17.8	-22	9	39.7	-77
MALDA	0	13.6	-100	15	10.5	43	0.4	14.5	-97
NORTH DINAJPUR	0	21.5	-100	7.5	2	275	0	8	-100
SOUTH DINAJPUR	0	8.9	-100	9	13.3	-32	0	19	-100
Monthly rainfall variations in West Bengal	53.5	285.6	-81	218.5	362.6	-40	123.4	531.5	-77

West Bengal district wise monthly rain fall statistics for the year 2013

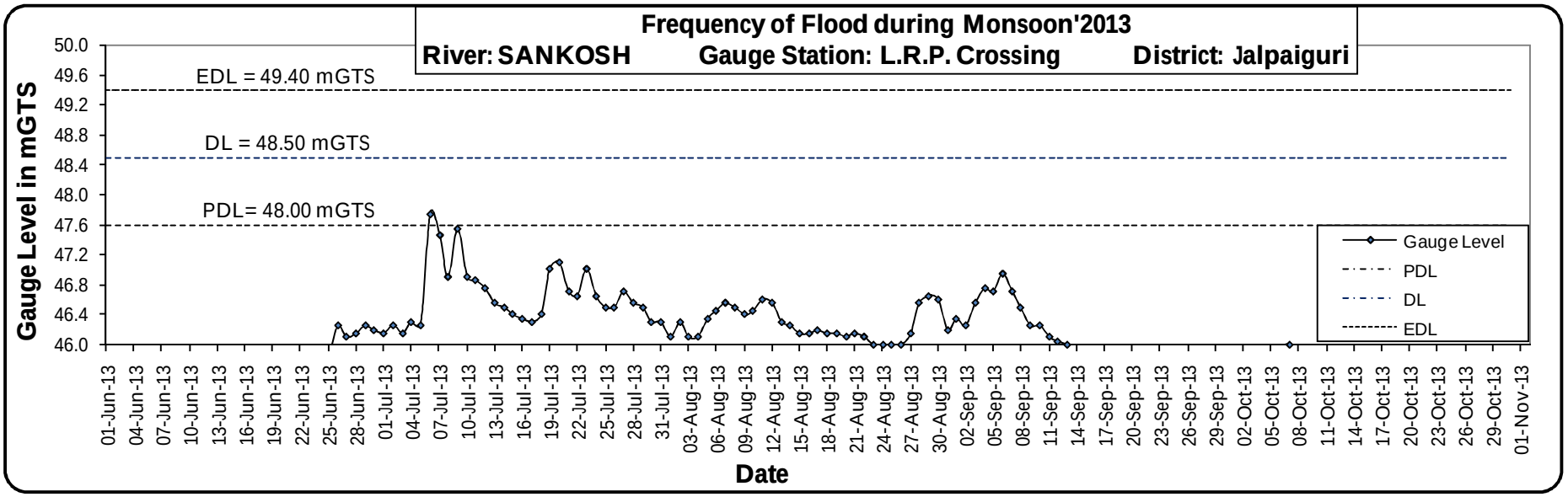
Months	April			May			June		
Rainfall in mm	Actual	Normal	% dep	Actual	Normal	% dep	Actual	Normal	% dep
BANKURA	72.6	36.3	100	342.4	66.9	412	369.7	215	72
BIRBHUM	46.2	30.9	50	152.3	78.7	94	164.9	222.3	-26
BURDWAN	41.5	37.8	10	175.1	78.8	122	210.2	198.2	6
EASTMIDNAPORE	34.8	34.7	0	200.3	108.1	85	205.9	253.5	-19
HOOGHLY	56.5	50.6	12	93.7	108.5	-14	223.9	243.4	-8
HOWRAH	40.2	52.6	-24	99.4	126.4	-21	228.1	233.2	-2
KOLKATA	31.2	53.1	-41	122.4	113.4	8	397.5	278.3	43
MURSHIDABAD	33.6	34	-1	192.7	87	121	174.5	237.6	-27
NADIA	39.3	42.1	-7	149.7	95.2	57	188.1	234.1	-20
NORTH 24 PARGANAS	57.6	51.5	12	214.9	113.4	90	350.3	271.9	29
PURULIA	47.1	36.1	30	294.1	57.3	413	200.9	222.1	-10
SOUTH 24 PARGANAS	46.7	41.7	12	202.7	125.1	62	354.1	316	12
WEST MIDNAPORE	52.4	56.8	-8	218.9	107.6	103	197	243.8	-19
COOCH BEHAR	126.3	138.9	-9	241.6	345.4	-30	441.2	668.8	-34
DARJEELING	83.6	130.5	-36	441.6	262.3	68	540.7	534.7	1
JALPAIGURI	120.3	119.3	1	316.2	339.3	-7	634.1	667.3	-5
MALDA	42.8	34.8	23	65.9	106.2	-38	230.3	216.6	6
NORTH DINAJPUR	59.1	35.7	66	119	162.9	-27	343.7	316	9
SOUTH DINAJPUR	81.1	58.9	38	83.8	167.8	-50	202.7	289.3	-30
Monthly rainfall variations in West Bengal	1112.9	1076.3	3	3726.7	2650.3	41	5657.8	5862.1	-3

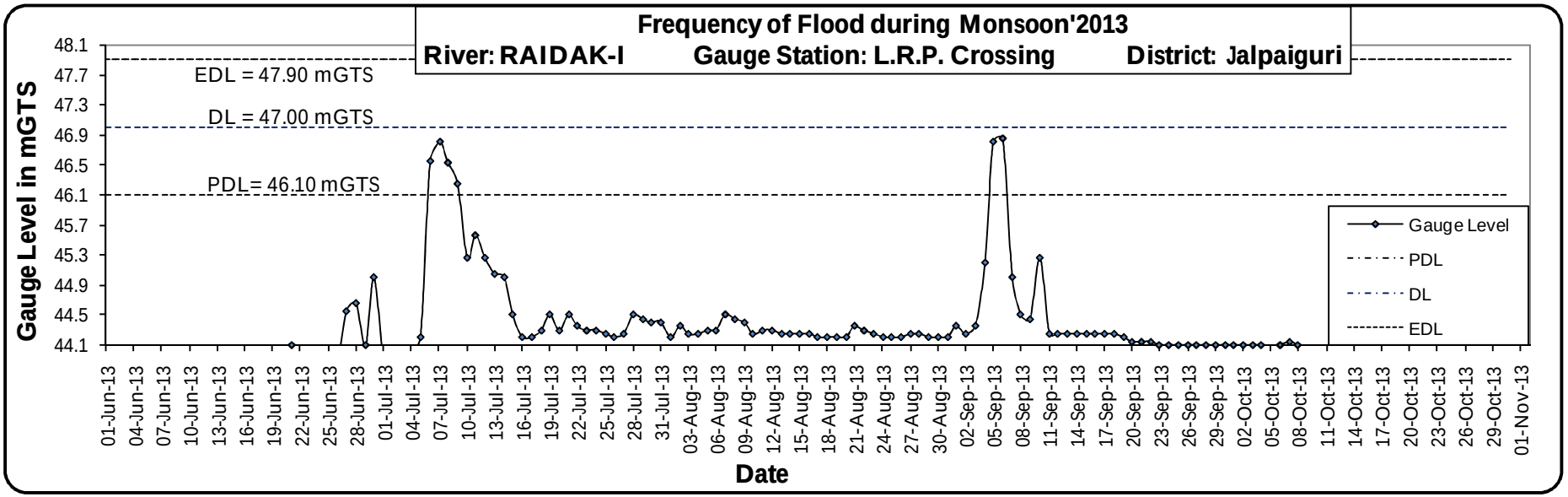
West Bengal district wise monthly rain fall statistics for the year 2013

Months	July			August			September		
Rainfall in mm	Actual	Normal	% dep	Actual	Normal	% dep	Actual	Normal	% dep
BANKURA	289.8	303.2	-4	368.4	290.7	27	260.8	242.3	8
BIRBHUM	170.6	313.9	-46	345.7	298.8	16	149.9	271	-45
BURDWAN	145.5	294.1	-51	341.1	285.3	20	250.7	251.1	0
EASTMIDNAPORE	286.4	284.9	1	544.8	338.7	61	392.7	343.2	14
HOOGHLY	221.4	316.1	-30	287	265.1	8	186.6	243.3	-23
HOWRAH	310.2	343.2	-10	550	329.4	67	249.1	305.6	-18
KOLKATA	327.2	361	-9	679.2	335.2	103	341.4	306.6	11
MURSHIDABAD	115.4	328.6	-65	311.3	256.9	21	195.2	256.2	-24
NADIA	181.1	270.8	-33	327	236	39	160.7	214.1	-25
NORTH 24 PARGANAS	282.5	317.2	-11	373.7	304.3	23	178.8	279.4	-36
PURULIA	246.6	298.7	-17	302.8	307	-1	233.8	266.7	-12
SOUTH 24 PARGANAS	363.3	463.6	-22	619.6	416.2	49	312.2	356.8	-13
WEST MIDNAPORE	400.9	329.5	22	353.9	316	12	321	276.8	16
COOCH BEHAR	718	864.9	-17	354.4	733	-52	359.7	470.9	-24
DARJEELING	727.1	756.9	-4	537	645.9	-17	348.2	502.8	-31
JALPAIGURI	1091.1	931.4	17	594.4	670.9	-11	485	483.3	0
MALDA	160.3	332.9	-52	354.6	284.8	25	144.2	283	-49
NORTH DINAJPUR	315.6	367	-14	363.3	307.7	18	202.4	403.8	-50
SOUTH DINAJPUR	176.6	368.9	-52	278.8	248	12	149.8	279.7	-46
Monthly rainfall variations in West Bengal	6529.6	7846.8	-17	7887.0	6869.9	15	4922.2	6036.6	-18

West Bengal district wise monthly rain fall statistics for the year 2013

Months	October			November			December		
Rainfall in mm	Actual	Normal	% dep	Actual	Normal	% dep	Actual	Normal	% dep
BANKURA	398	105.2	278	0	9.8	-100	0	9.5	-100
BIRBHUM	327.5	105.1	212	0	15.8	-100	0	5.6	-100
BURDWAN	342.5	99.8	243	0	11.4	-100	0	6	-100
EASTMIDNAPORE	479.1	196.9	143	0	34	-100	0	9.3	-100
HOOGHLY	282.8	102.1	177	0	16	-100	0	6.9	-100
HOWRAH	352.6	99.1	256	0	31.3	-100	0	10.1	-100
KOLKATA	523.1	155.3	237	0	24.8	-100	0	8.9	-100
MURSHIDABAD	204	126.3	62	0	11	-100	0	6.5	-100
NADIA	224.8	100.2	124	0	10.4	-100	0.3	7.8	-96
NORTH 24 PARGANAS	337.4	130.9	158	0	21.8	-100	0	5.7	-100
PURULIA	434.6	91.5	375	0	16.7	-100	0	7.6	-100
SOUTH 24 PARGANAS	388.7	218.4	78	0.3	62.3	-100	0	9.7	-100
WEST MIDNAPORE	391.7	106.5	268	0	17.9	-100	0	5.3	-100
COOCH BEHAR	181.8	141.3	29	6.4	15.1	-58	0	8.3	-100
DARJEELING	224.6	118.9	89	7.6	16.8	-55	1.7	9.9	-83
JALPAIGURI	202	159.9	26	6.4	18	-64	0.2	7.2	-97
MALDA	221.8	102.5	116	2.8	13.2	-79	0	6.8	-100
NORTH DINAJPUR	169.3	90.7	87	0	9.1	-100	0	3.2	-100
SOUTH DINAJPUR	188.6	112.5	68	0	13	-100	0	5.6	-100
Monthly rainfall variations in West Bengal	5874.9	2363.1	149	23.5	368.4	-94	2.2	139.9	-98


Frequency of Flood during Monsoon'2013
River: SANKOSH
Gauge Station: L.R.P. Crossing
District: Jalpaiguri
EDL = 49.40 mGTS
DL = 48.50 mGTS
PDL= 48.00 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date


Frequency of Flood during Monsoon'2013
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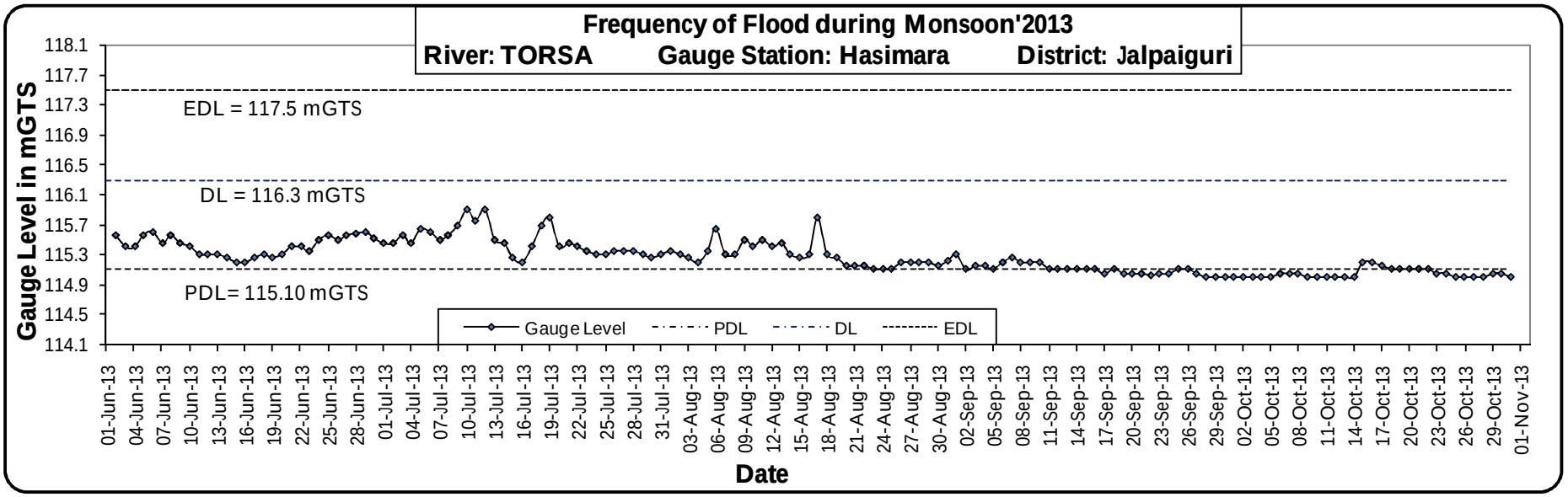
Gauge Station: L.R.P. Crossing
District: Jalpaiguri
EDL = 47.90 mGTS
DL = 47.00 mGTS
PDL= 46.10 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date


Frequency of Flood during Monsoon'2013
River: TORSA
Gauge Station: Hasimara
District: Jalpaiguri
Gauge Level in mGTS
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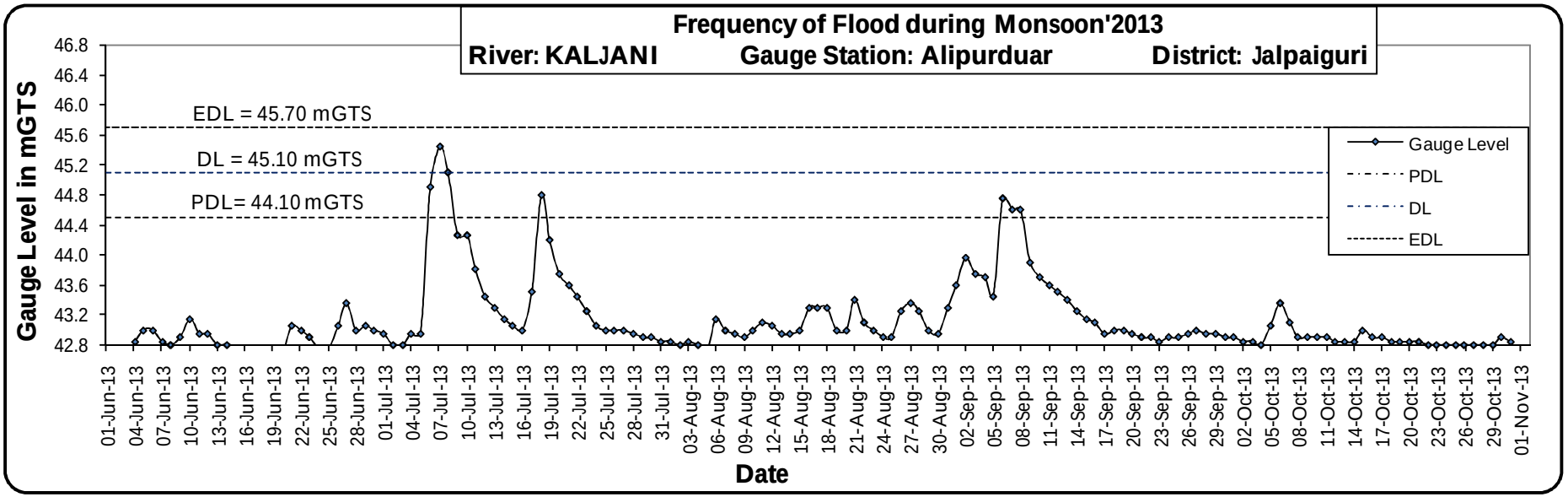
DL = 116.3 mGTS
PDL= 115.10 mGTS
Gauge Level
PDL
DL
EDL
Date


Frequency of Flood during Monsoon'2013
River: KALJANI
Gauge Station: Alipurduar
District: Jalpaiguri
Gauge Level in mGTS
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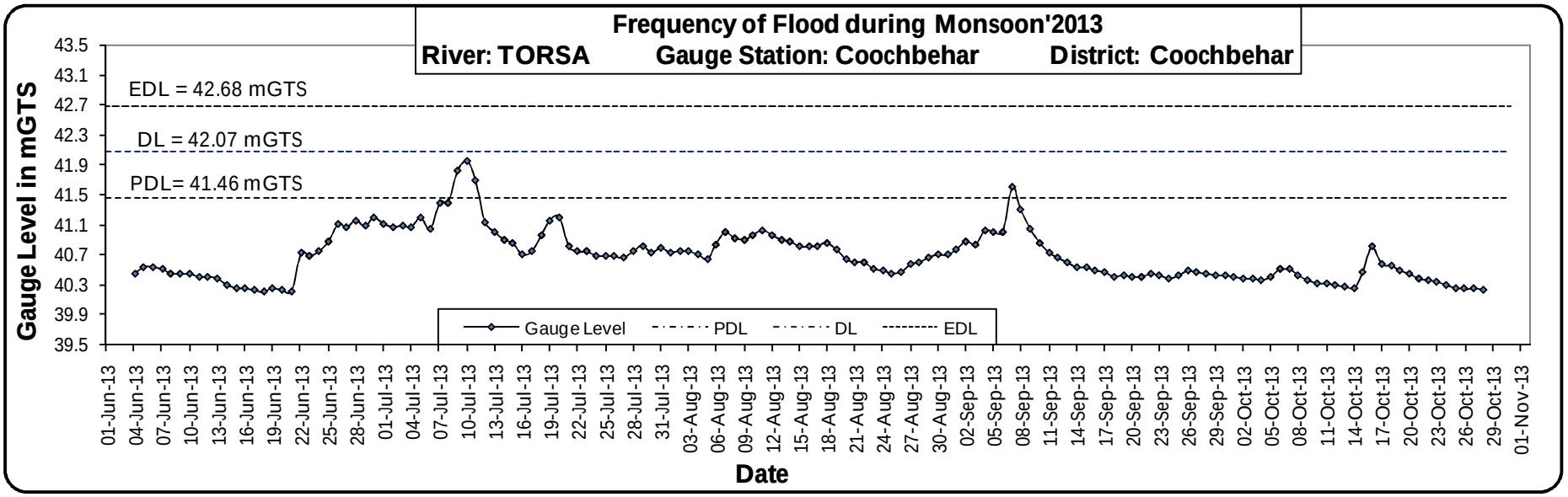
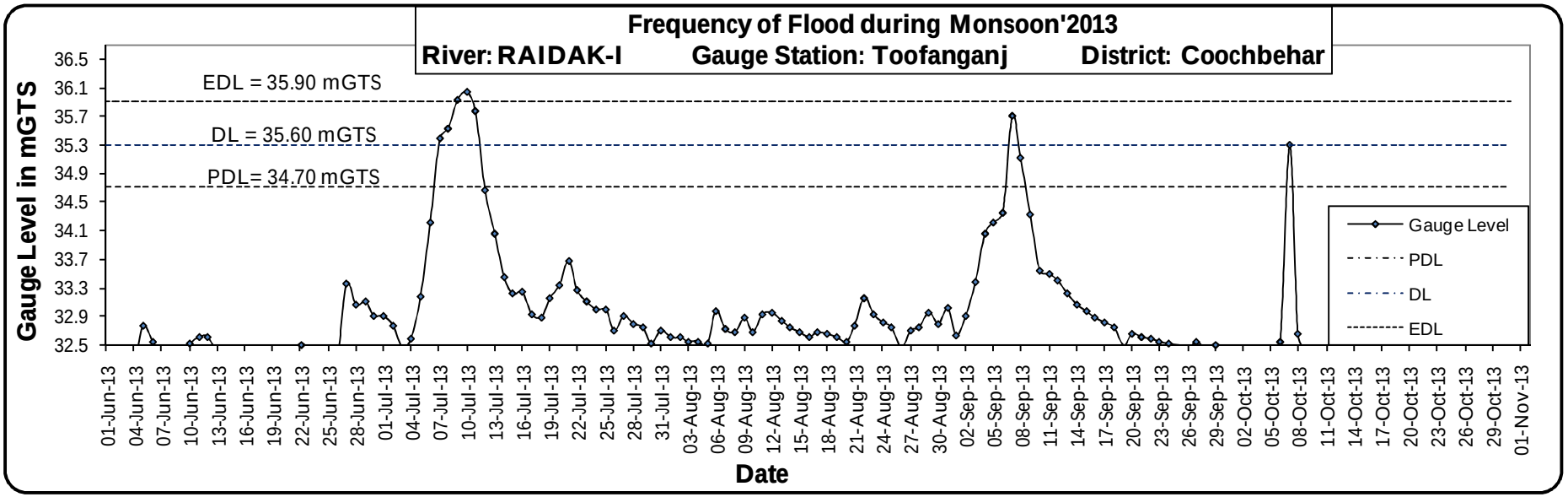
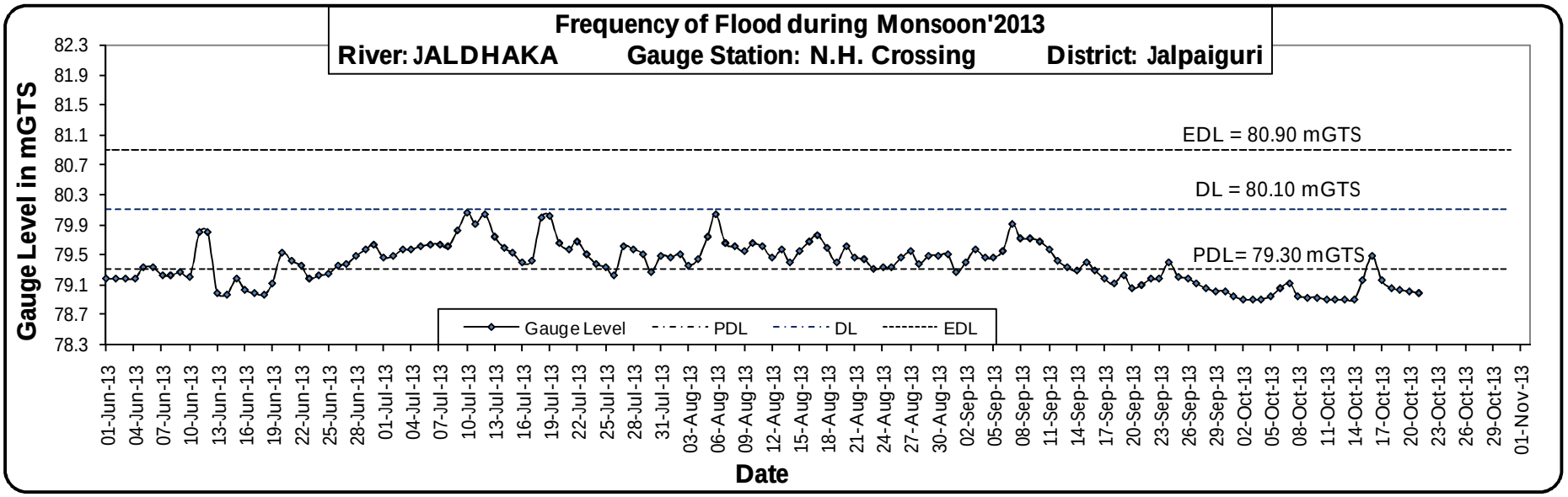
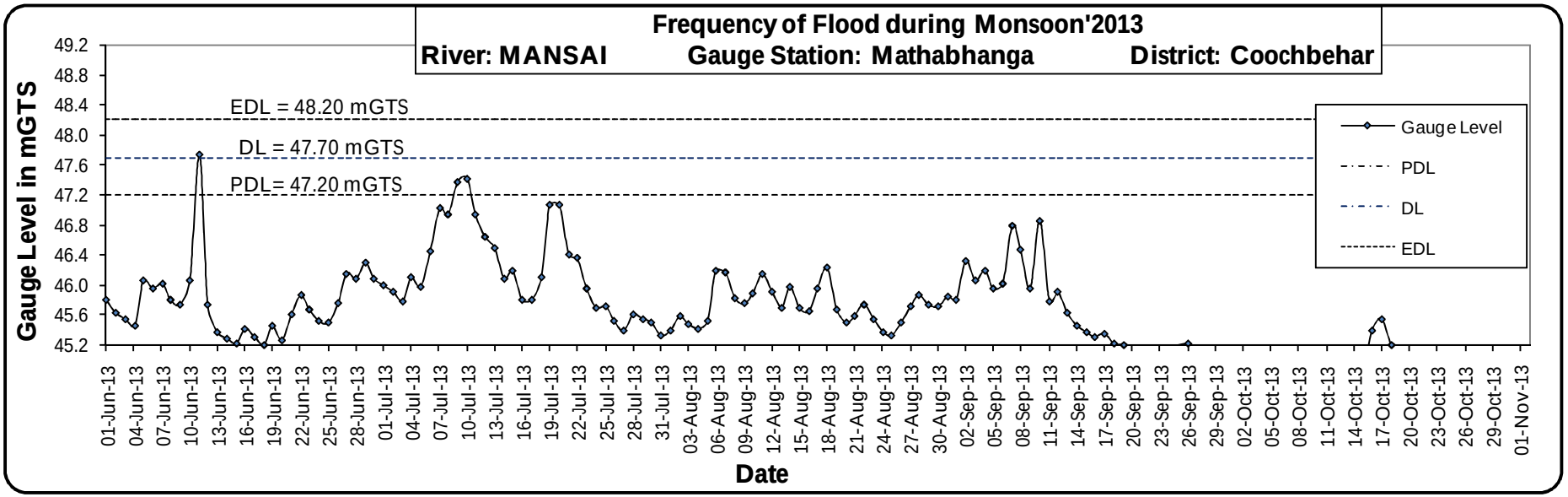
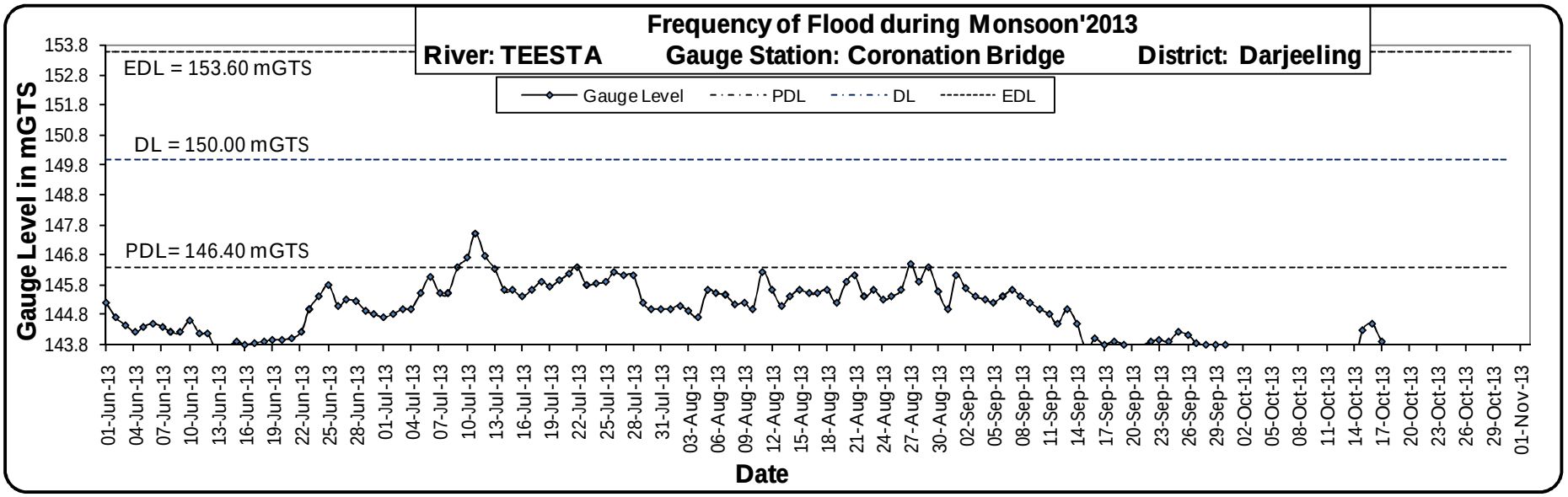
DL = 45.10 mGTS
PDL= 44.10 mGTS
Gauge Level
PDL
DL
EDL
Date

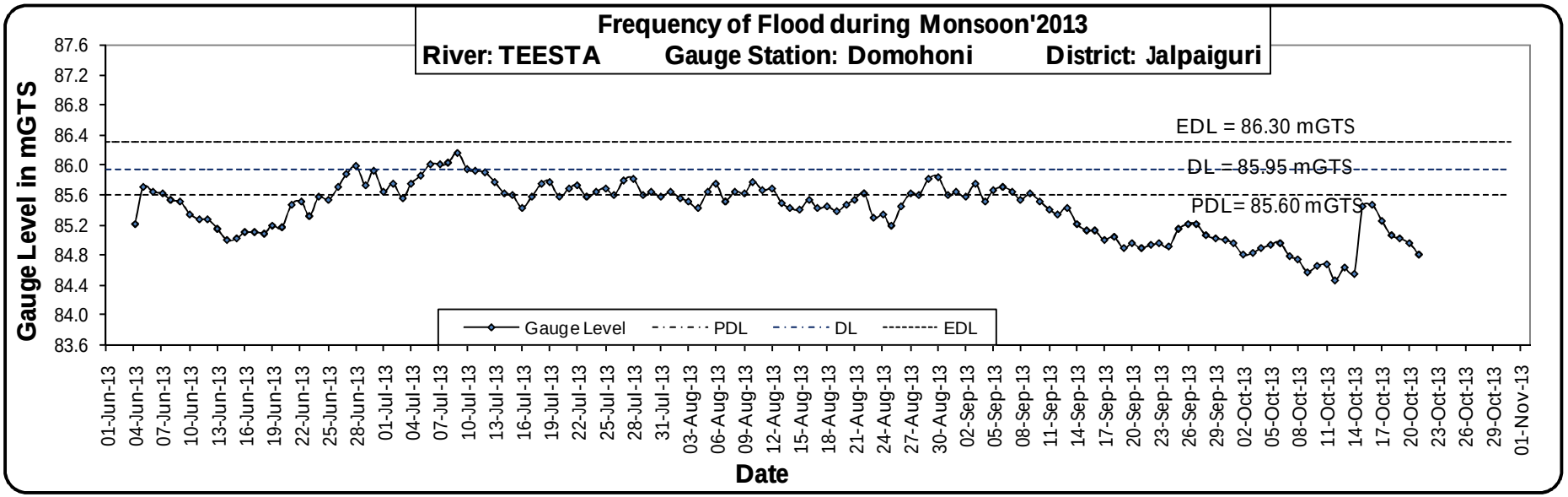

Frequency of Flood during Monsoon'2013
River: TORSA Gauge Station: Coochbehar District: Coochbehar
EDL = 42.68 mGTS
DL = 42.07 mGTS
PDL= 41.46 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

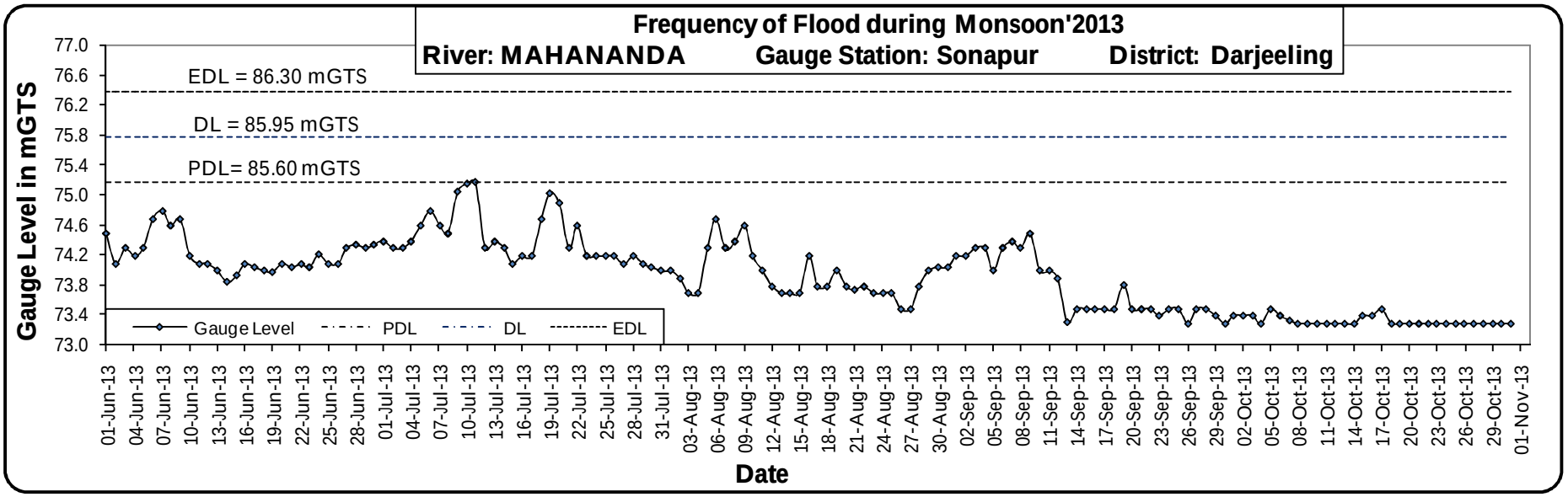

Frequency of Flood during Monsoon'2013
River: RAIDAK-I Gauge Station: Toofanganj District: Coochbehar
EDL = 35.90 mGTS
DL = 35.60 mGTS
PDL= 34.70 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

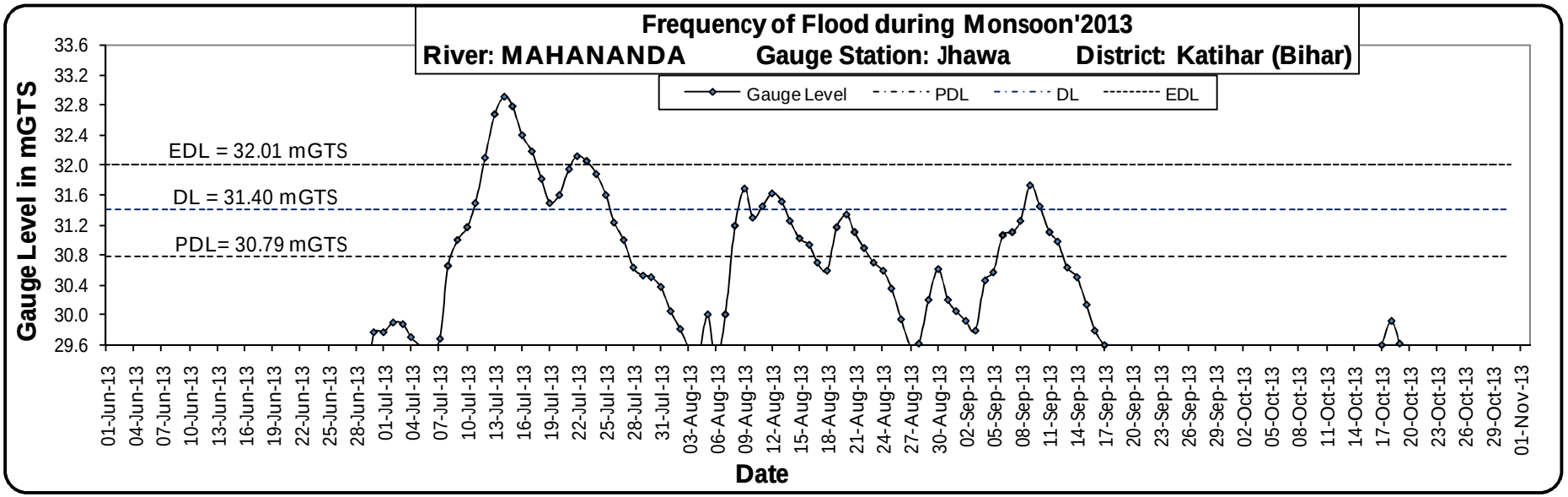

Frequency of Flood during Monsoon'2013
River: JALDHAKA
Gauge Station: N.H. Crossing
District: Jalpaiguri
Gauge Level in mGTS
82.3
81.9
81.5
81.1
80.7
80.3
79.9
79.5
79.1
78.7
78.3
EDL = 80.90 mGTS
DL = 80.10 mGTS
PDL= 79.30 mGTS
Gauge Level
PDL
DL
EDL
01-Jun-13
04-Jun-13
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
Date

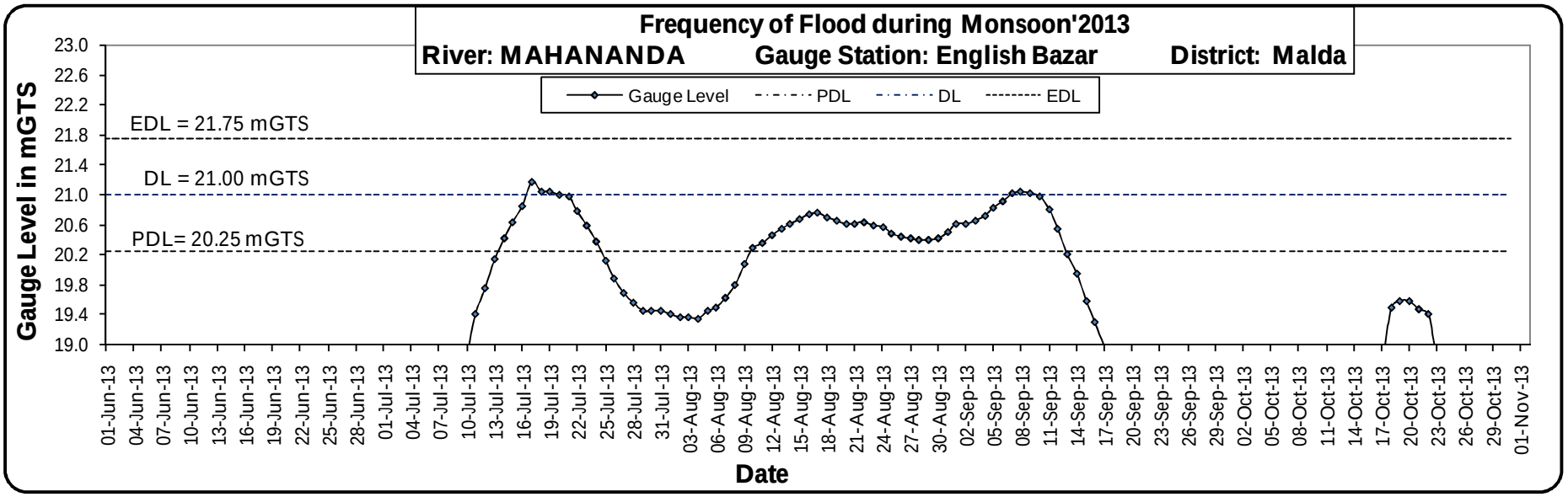

Frequency of Flood during Monsoon'2013
River: MANSAI
Gauge Station: Mathabhanga
District: Coochbehar
Gauge Level in mGTS
49.2
48.8
48.4
48.0
47.6
47.2
46.8
46.4
46.0
45.6
45.2
EDL = 48.20 mGTS
DL = 47.70 mGTS
PDL= 47.20 mGTS
Gauge Level
PDL
DL
EDL
01-Jun-13
04-Jun-13
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
Date

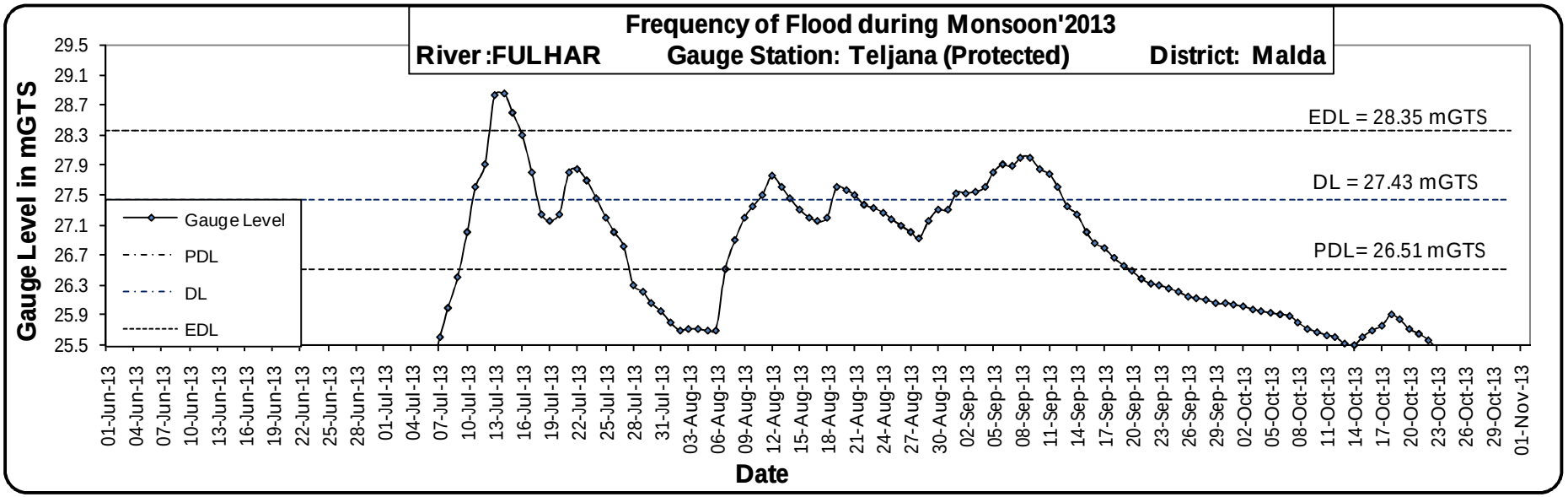

Frequency of Flood during Monsoon'2013
River: TEESTA
Gauge Station: Coronation Bridge
District: Darjeeling
EDL = 153.60 mGTS
DL = 150.00 mGTS
PDL= 146.40 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
153.8
152.8
151.8
150.8
149.8
148.8
147.8
146.8
145.8
144.8
143.8
01-Jun-13
04-Jun-13
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
Date

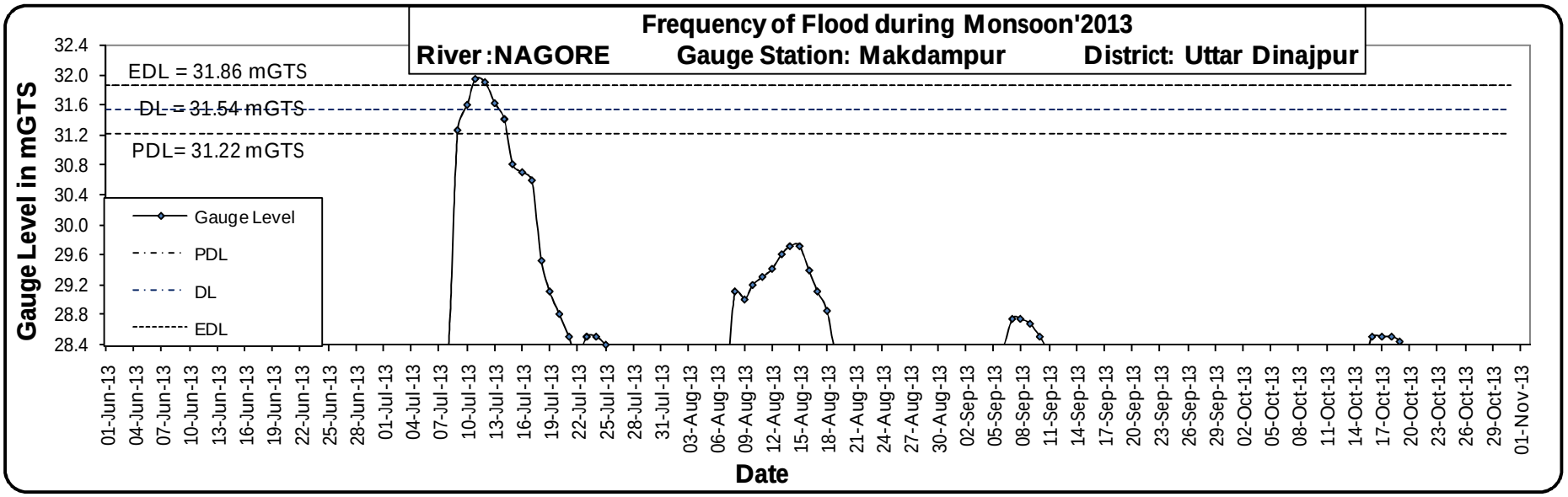

Frequency of Flood during Monsoon'2013
River: TEESTA
Gauge Station: Domohoni
District: Jalpaiguri
EDL = 86.30 mGTS
DL = 85.95 mGTS
PDL= 85.60 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
87.6
87.2
86.8
86.4
86.0
85.6
85.2
84.8
84.4
84.0
83.6
01-Jun-13
04-Jun-13
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
Date

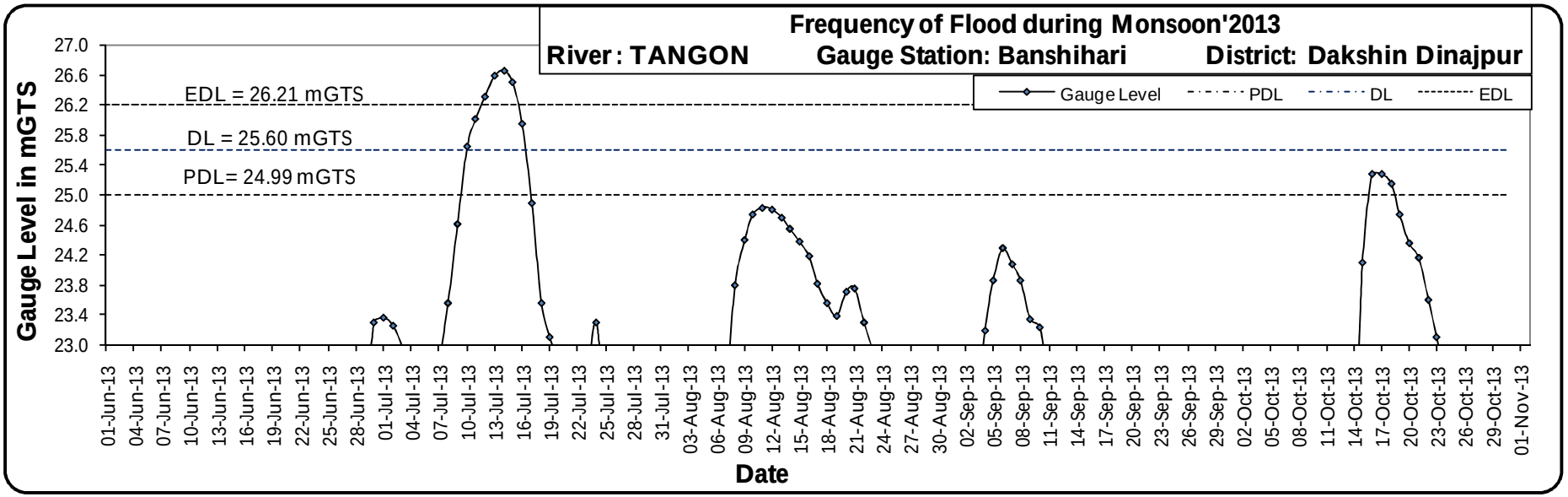

Frequency of Flood during Monsoon'2013
River: MAHANANDA Gauge Station: Sonapur District: Darjeeling
EDL = 86.30 mGTS
DL = 85.95 mGTS
PDL= 85.60 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
77.0
76.6
76.2
75.8
75.4
75.0
74.6
74.2
73.8
73.4
73.0
01-Jun-13
04-Jun-13
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
Date

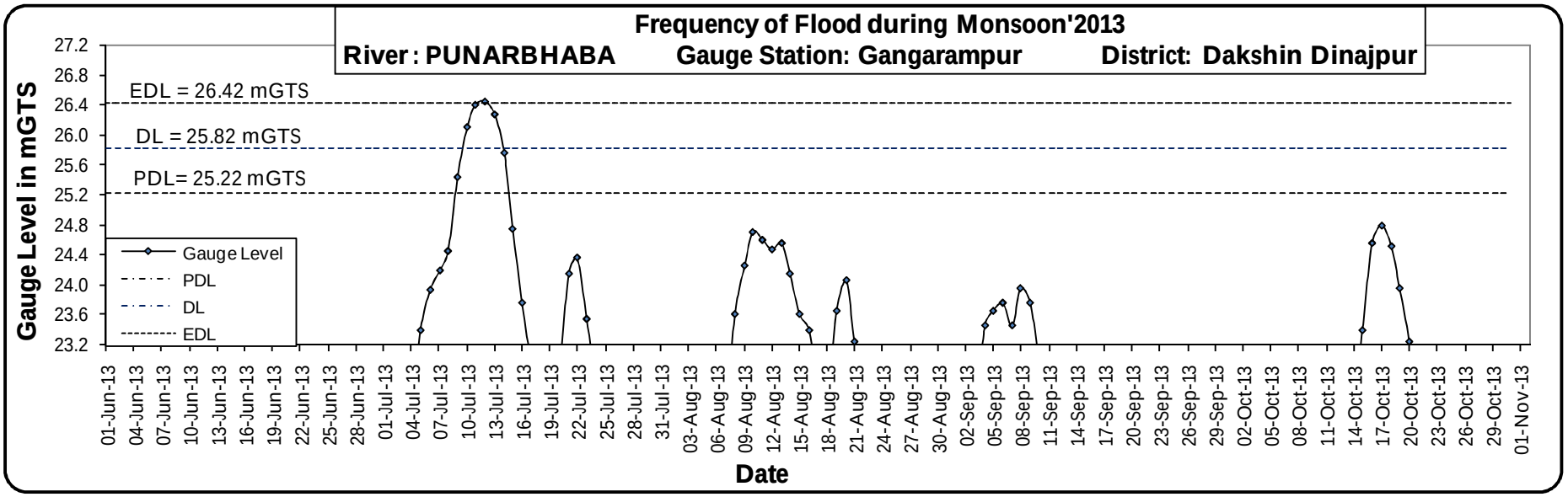

Frequency of Flood during Monsoon'2013
River: MAHANANDA Gauge Station: Jhawa District: Katihar (Bihar)
Gauge Level
PDL
DL
EDL
EDL = 32.01 mGTS
DL = 31.40 mGTS
PDL= 30.79 mGTS
Gauge Level in mGTS
33.6
33.2
32.8
32.4
32.0
31.6
31.2
30.8
30.4
30.0
29.6
01-Jun-13
04-Jun-13
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
Date

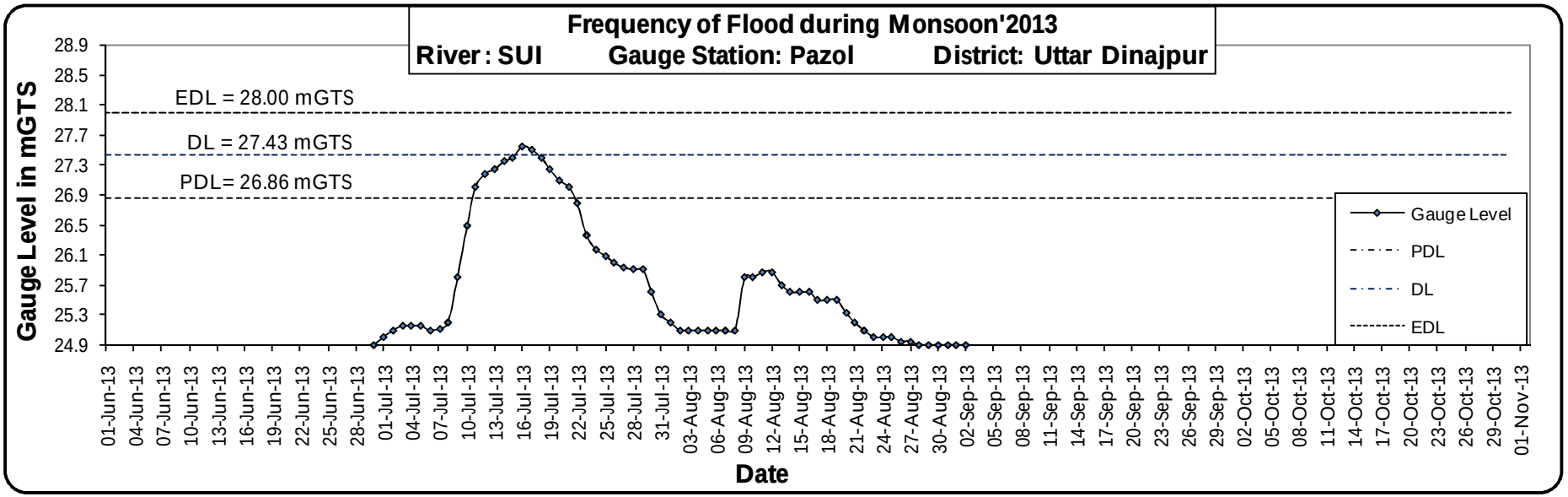

Frequency of Flood during Monsoon'2013
River: MAHANANDA
Gauge Station: English Bazar
District: Malda
Gauge Level
PDL
DL
EDL
EDL = 21.75 mGTS
DL = 21.00 mGTS
PDL= 20.25 mGTS
Gauge Level in mGTS
Date

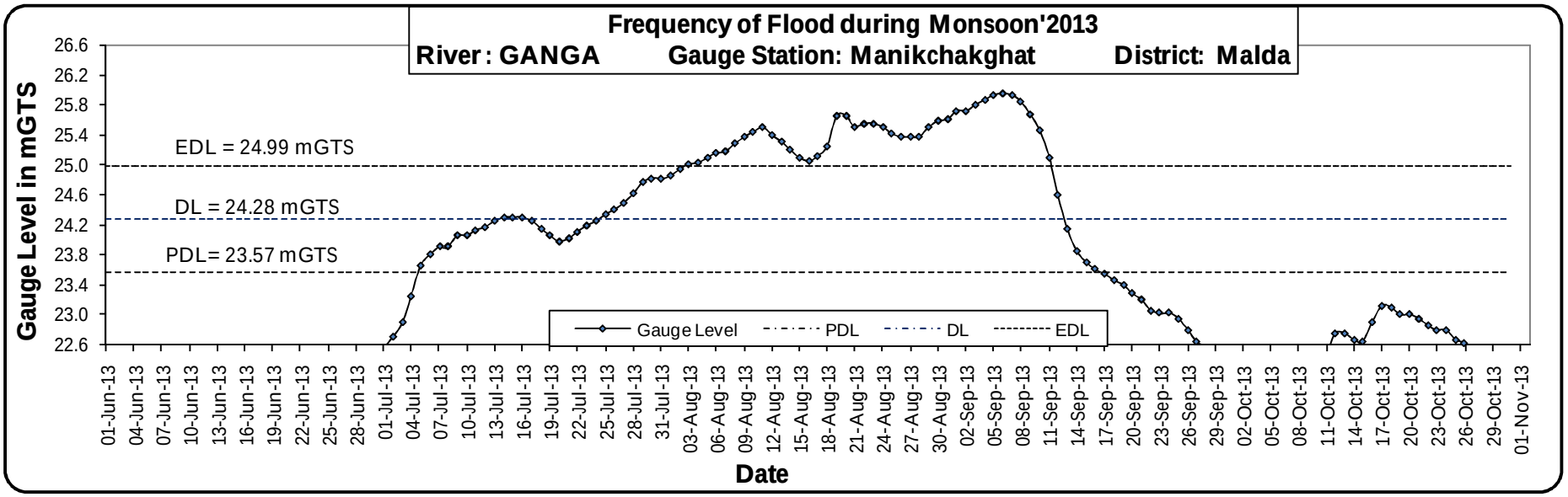

Frequency of Flood during Monsoon'2013
River :FULHAR
Gauge Station: Teljana (Protected)
District: Malda
Gauge Level
PDL
DL
EDL
EDL = 28.35 mGTS
DL = 27.43 mGTS
PDL= 26.51 mGTS
Gauge Level in mGTS
Date

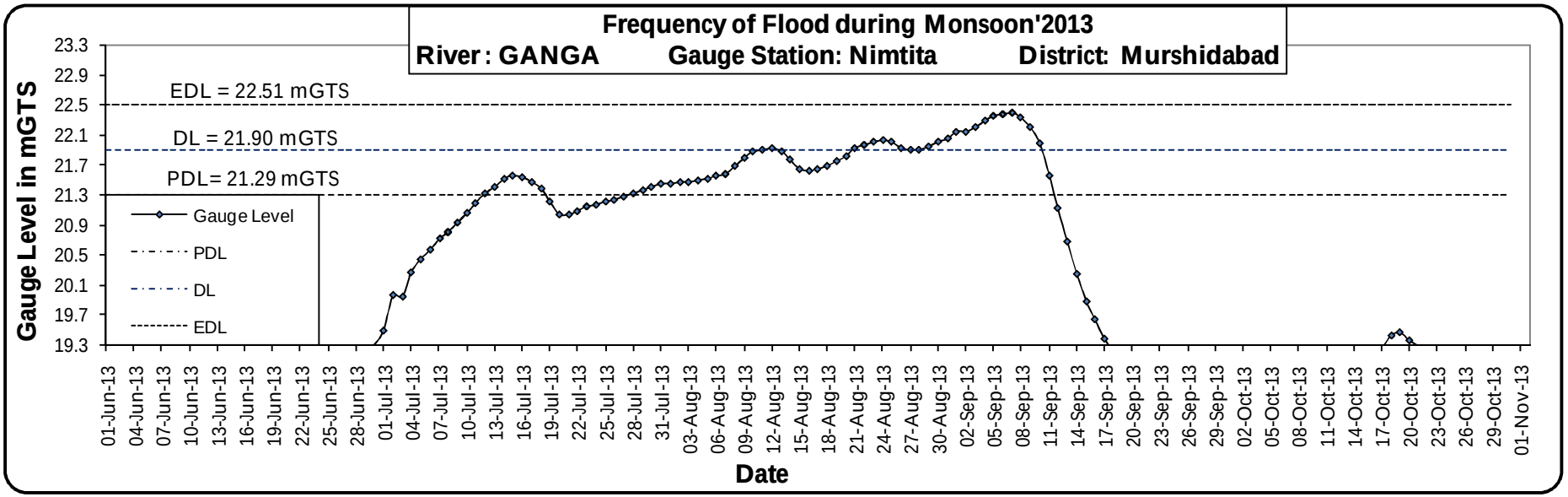

Frequency of Flood during Monsoon'2013
River :NAGORE
Gauge Station: Makdampur
District: Uttar Dinajpur
EDL = 31.86 mGTS
DL = 31.54 mGTS
PDL= 31.22 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

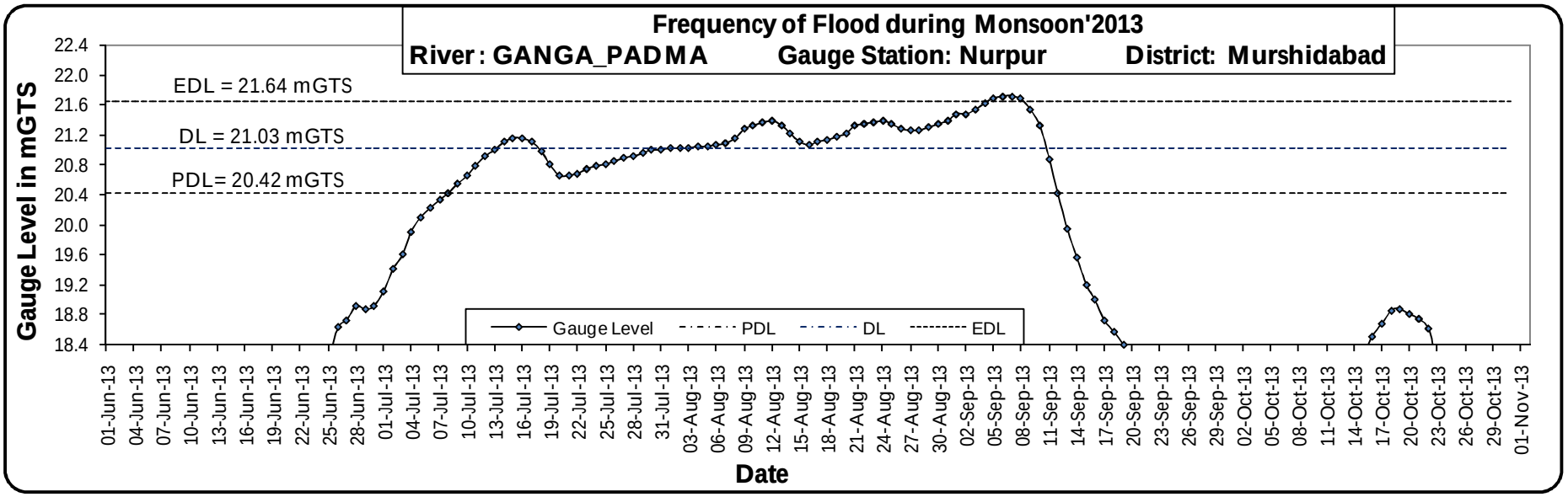

Frequency of Flood during Monsoon'2013
River : TANGON
Gauge Station: Banshihari
District: Dakshin Dinajpur
EDL = 26.21 mGTS
DL = 25.60 mGTS
PDL= 24.99 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

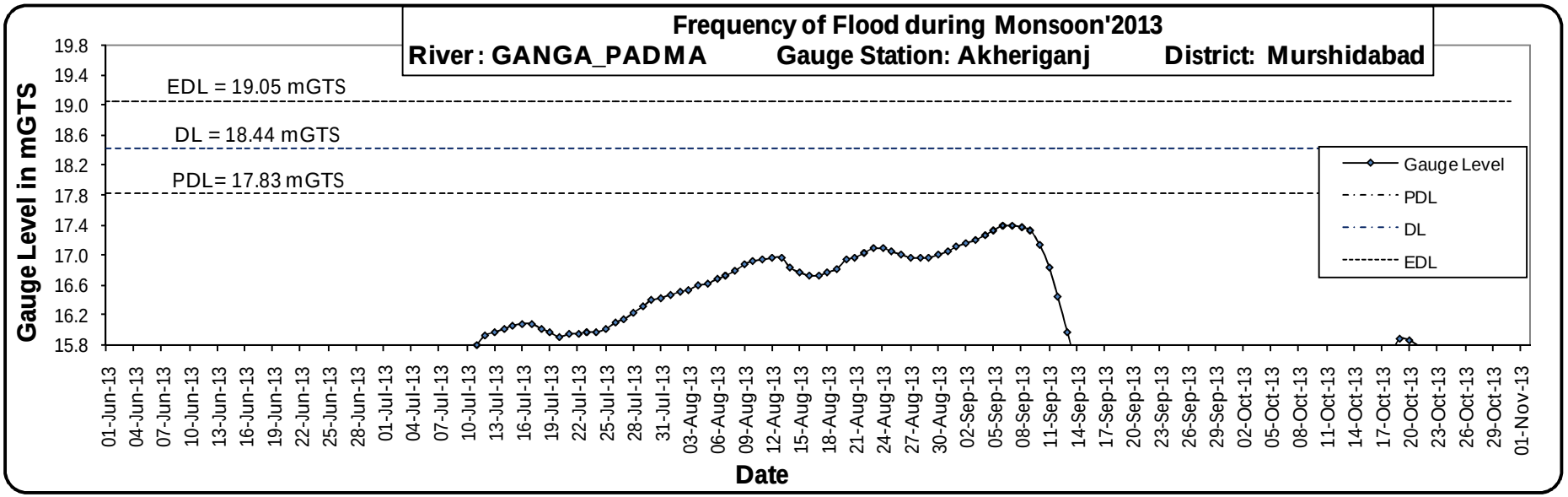

Frequency of Flood during Monsoon'2013
River : PUNARBHABA
Gauge Station: Gangarampur
District: Dakshin Dinajpur
EDL = 26.42 mGTS
DL = 25.82 mGTS
PDL= 25.22 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

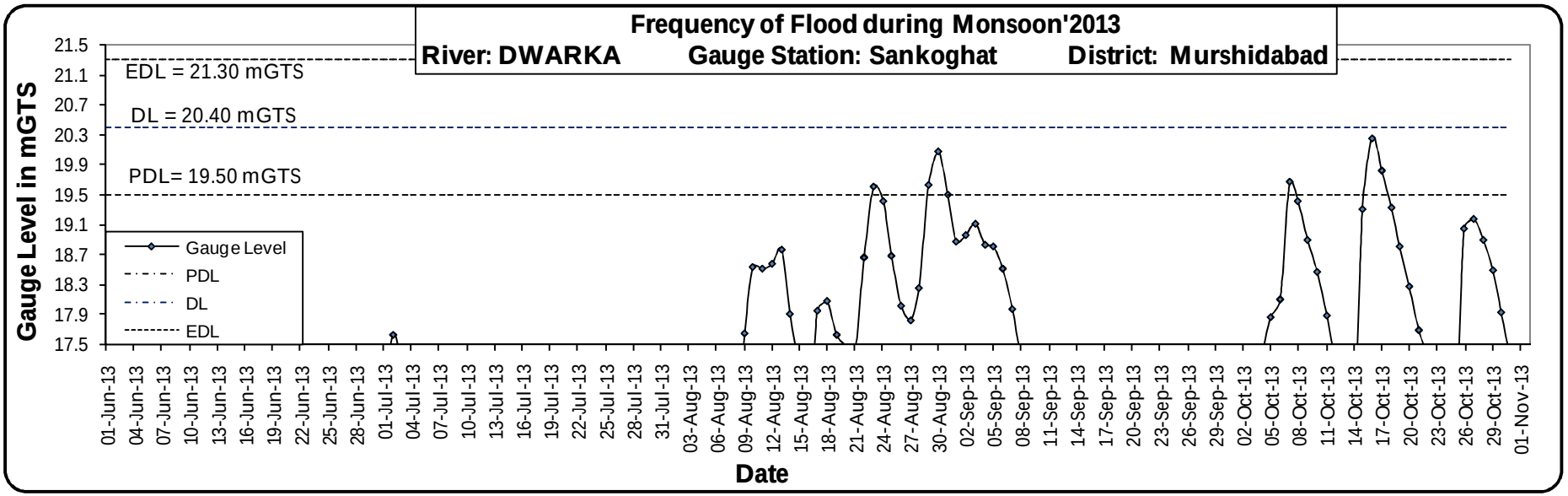

Frequency of Flood during Monsoon'2013
River : SUI
Gauge Station: Pazol
District: Uttar Dinajpur
EDL = 28.00 mGTS
DL = 27.43 mGTS
PDL= 26.86 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

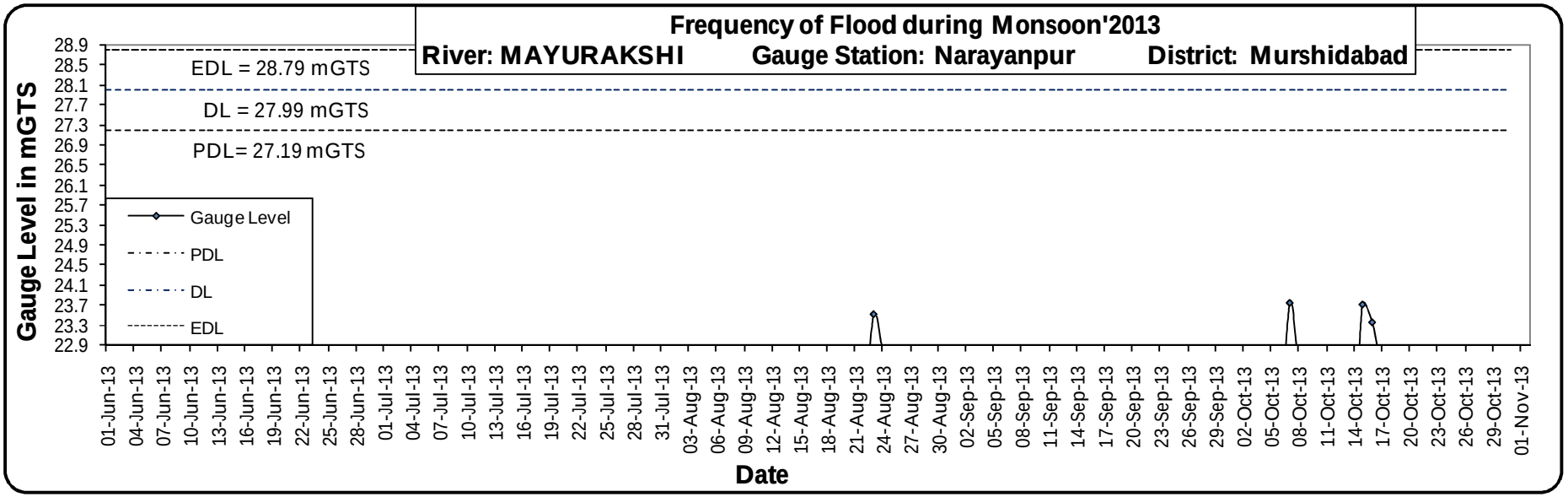

Frequency of Flood during Monsoon'2013
River : GANGA
Gauge Station: Manikchakghat
District: Malda
Gauge Level in mGTS
EDL = 24.99 mGTS
DL = 24.28 mGTS
PDL= 23.57 mGTS
Gauge Level
PDL
DL
EDL
Date

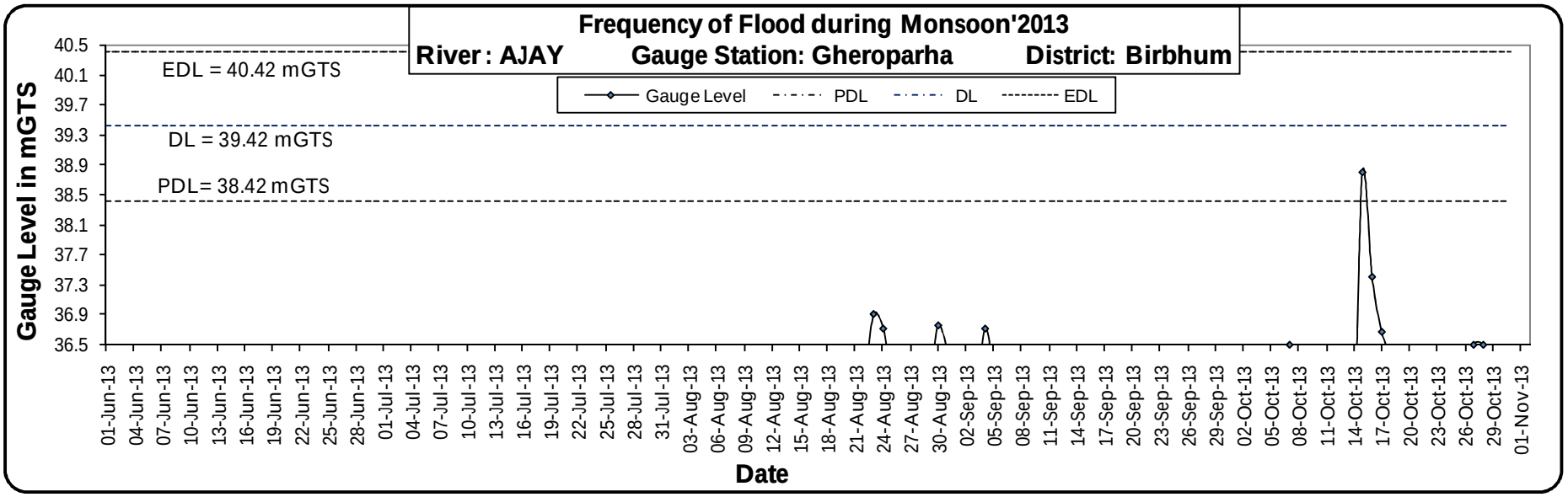

Frequency of Flood during Monsoon'2013
River : GANGA
Gauge Station: Nimtita
District: Murshidabad
Gauge Level in mGTS
EDL = 22.51 mGTS
DL = 21.90 mGTS
PDL= 21.29 mGTS
Gauge Level
PDL
DL
EDL
Date

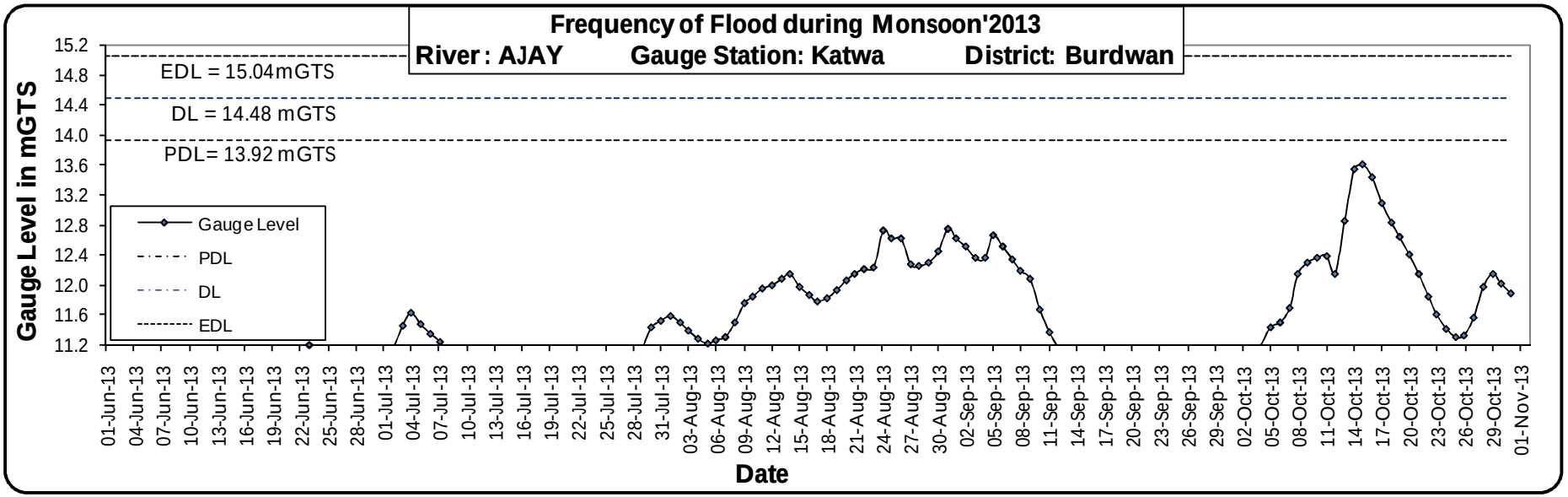

Frequency of Flood during Monsoon'2013
River : GANGA_PADMA
Gauge Station: Nurpur
District: Murshidabad
EDL = 21.64 mGTS
DL = 21.03 mGTS
PDL= 20.42 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

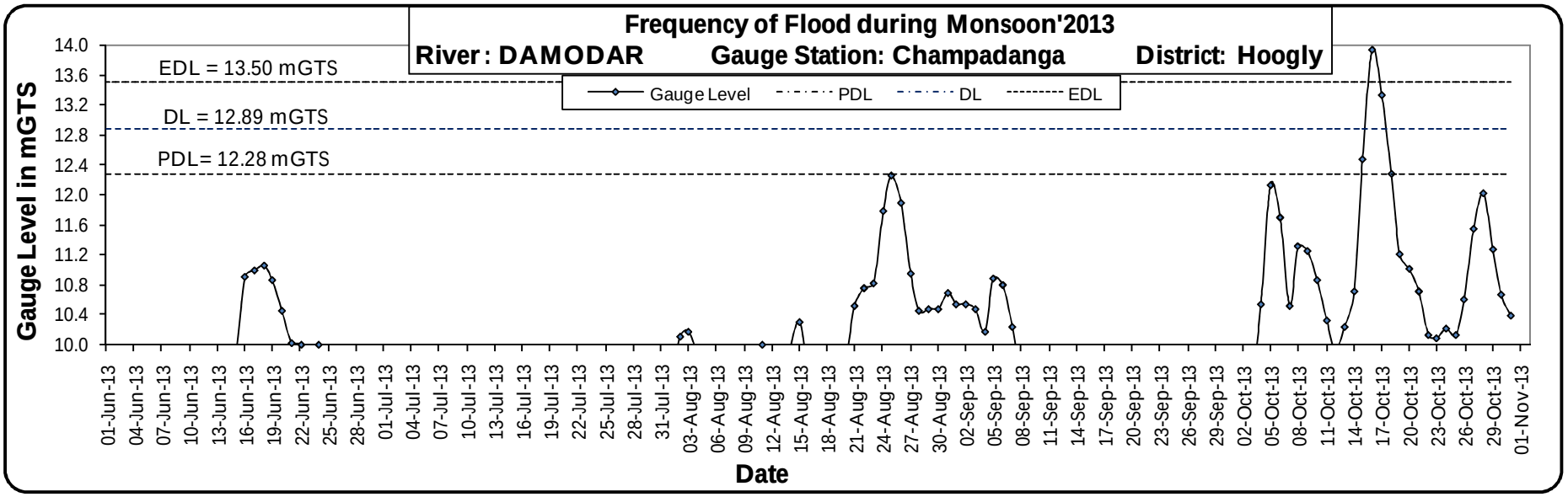

Frequency of Flood during Monsoon'2013
River : GANGA_PADMA
Gauge Station: Akheriganj
District: Murshidabad
EDL = 19.05 mGTS
DL = 18.44 mGTS
PDL= 17.83 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

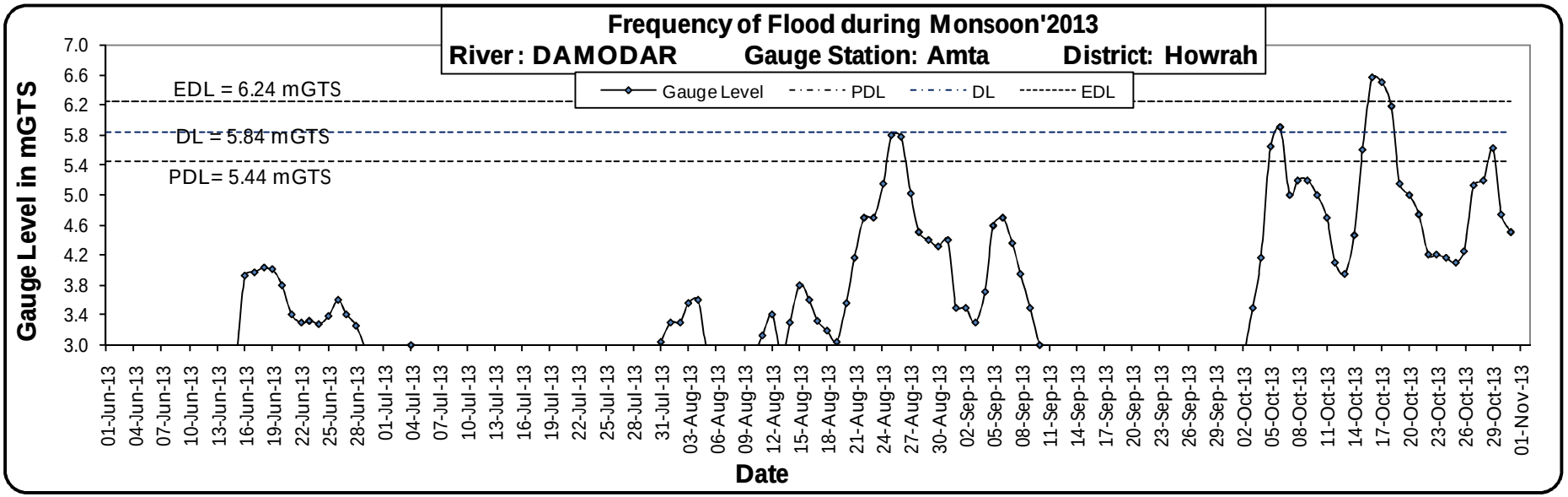

Frequency of Flood during Monsoon'2013
River: DWARKA
Gauge Station: Sankoghat
District: Murshidabad
EDL = 21.30 mGTS
DL = 20.40 mGTS
PDL= 19.50 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

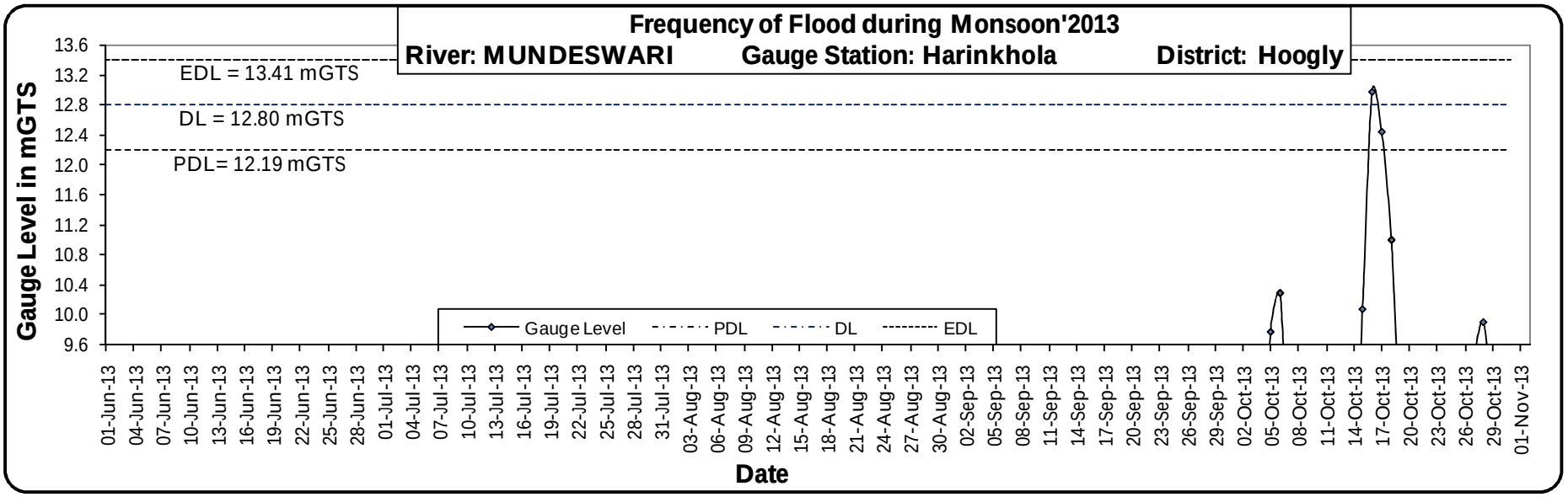

Frequency of Flood during Monsoon'2013
River: MAYURAKSHI
Gauge Station: Narayanpur
District: Murshidabad
EDL = 28.79 mGTS
DL = 27.99 mGTS
PDL= 27.19 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

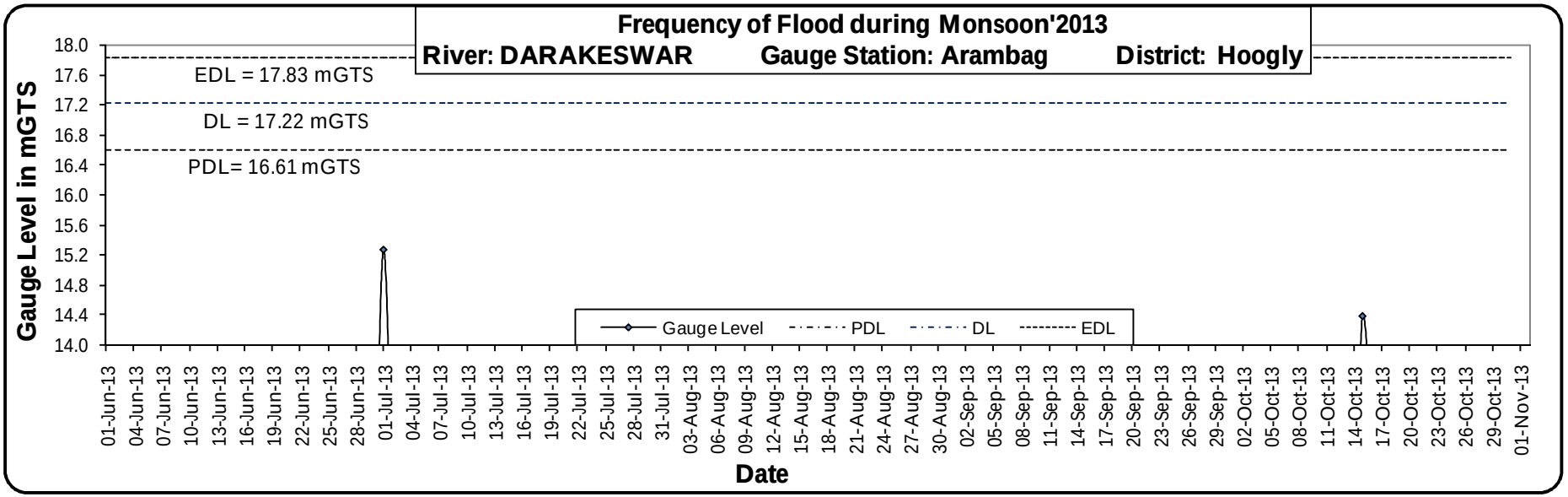

Frequency of Flood during Monsoon'2013
River : AJAY
Gauge Station: Gheroparha
District: Birbhum
EDL = 40.42 mGTS
DL = 39.42 mGTS
PDL= 38.42 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

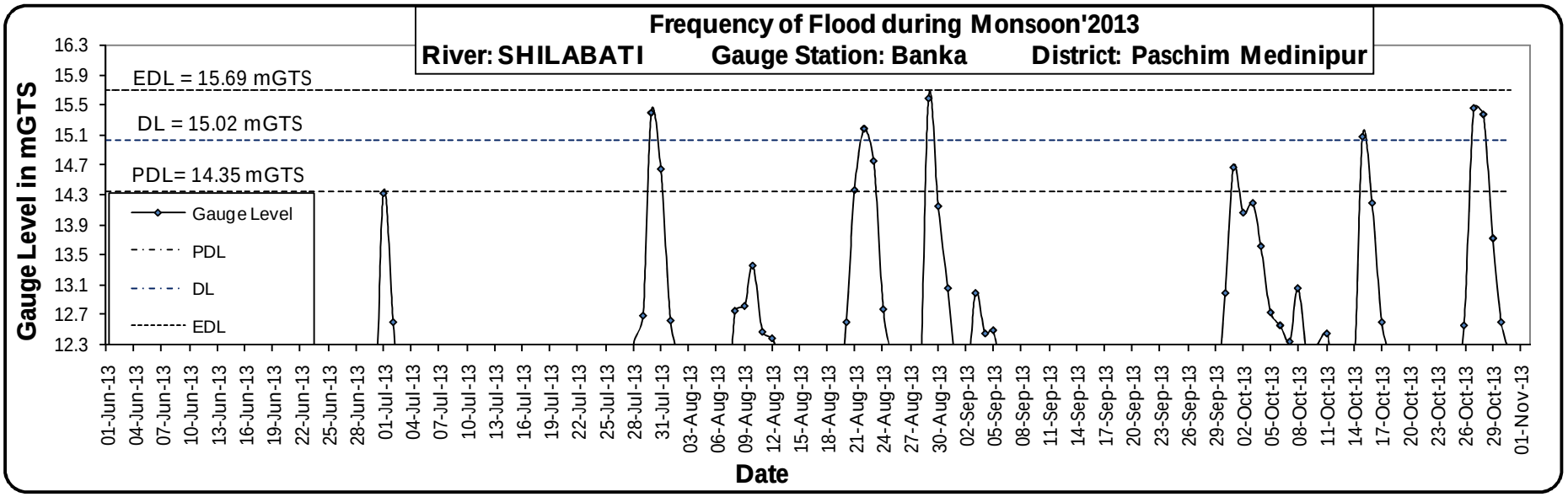

Frequency of Flood during Monsoon'2013
River : AJAY
Gauge Station: Katwa
District: Burdwan
EDL = 15.04mGTS
DL = 14.48 mGTS
PDL= 13.92 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

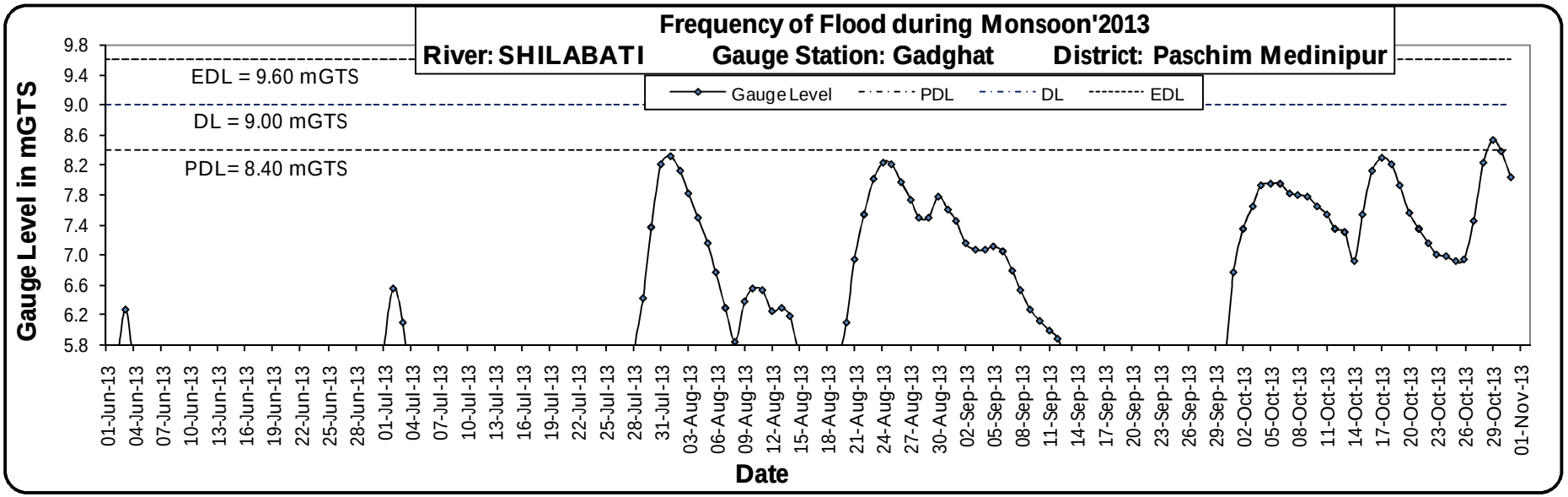

Frequency of Flood during Monsoon'2013
River : DAMODAR
Gauge Station: Champadanga
District: Hoogly
EDL = 13.50 mGTS
DL = 12.89 mGTS
PDL= 12.28 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

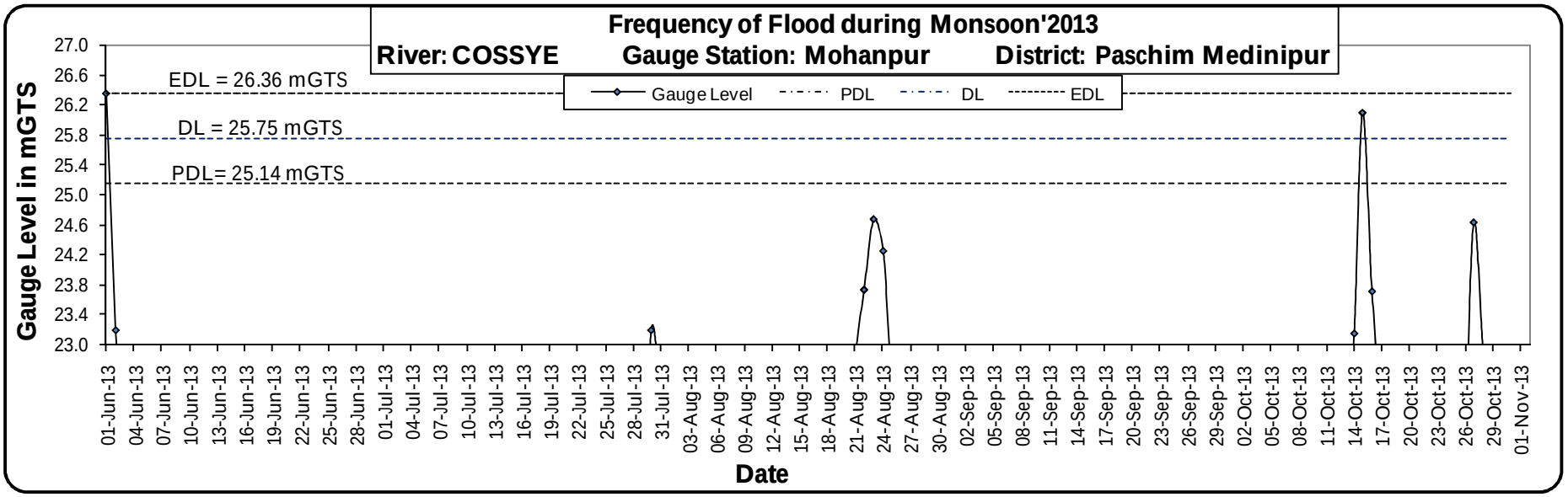

Frequency of Flood during Monsoon'2013
River : DAMODAR
Gauge Station: Amta
District: Howrah
EDL = 6.24 mGTS
DL = 5.84 mGTS
PDL= 5.44 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

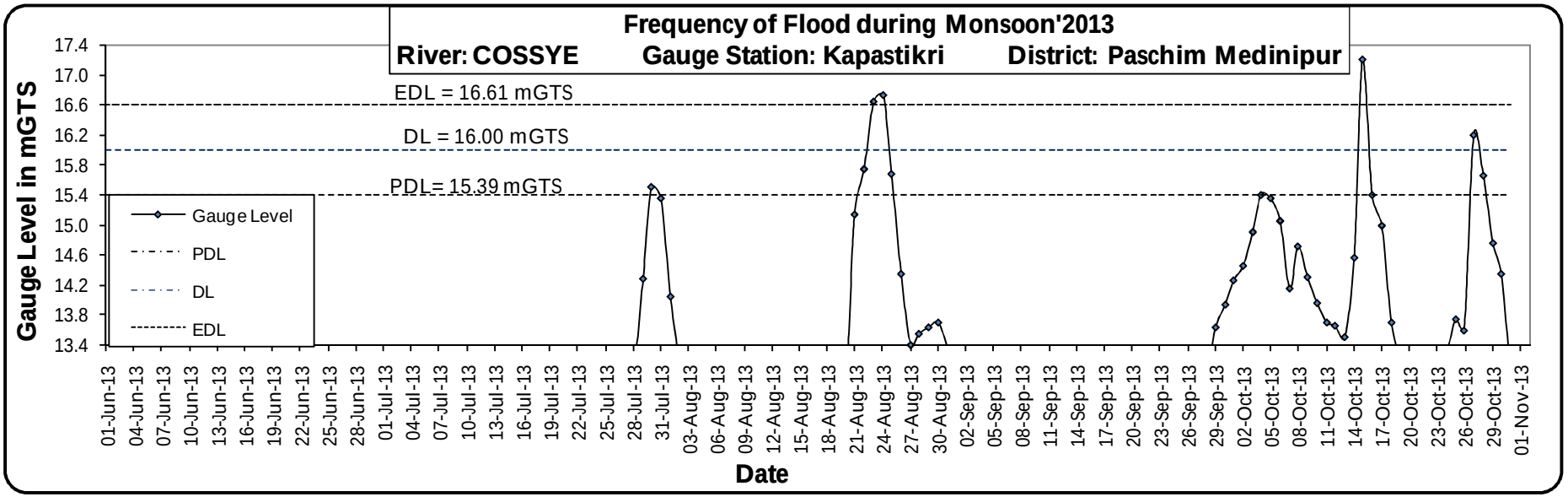

Frequency of Flood during Monsoon'2013
River: MUNDESWARI
Gauge Station: Harinkhola
District: Hoogly
EDL = 13.41 mGTS
DL = 12.80 mGTS
PDL= 12.19 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

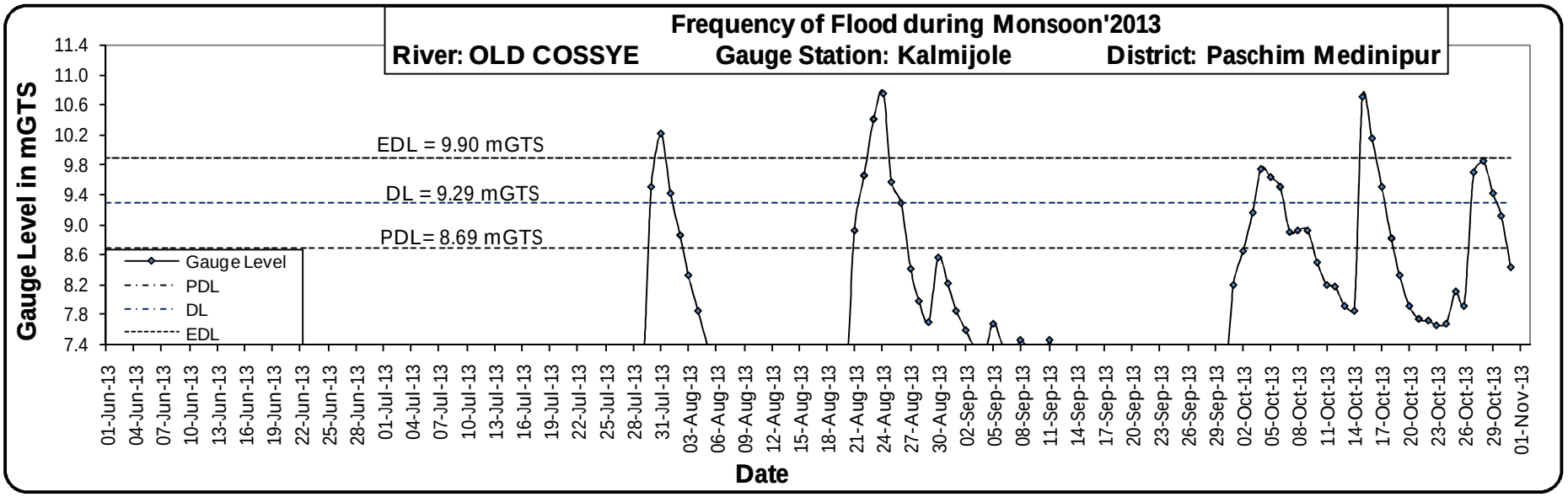

Frequency of Flood during Monsoon'2013
River: DARAKESWAR
Gauge Station: Arambag
District: Hoogly
EDL = 17.83 mGTS
DL = 17.22 mGTS
PDL= 16.61 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

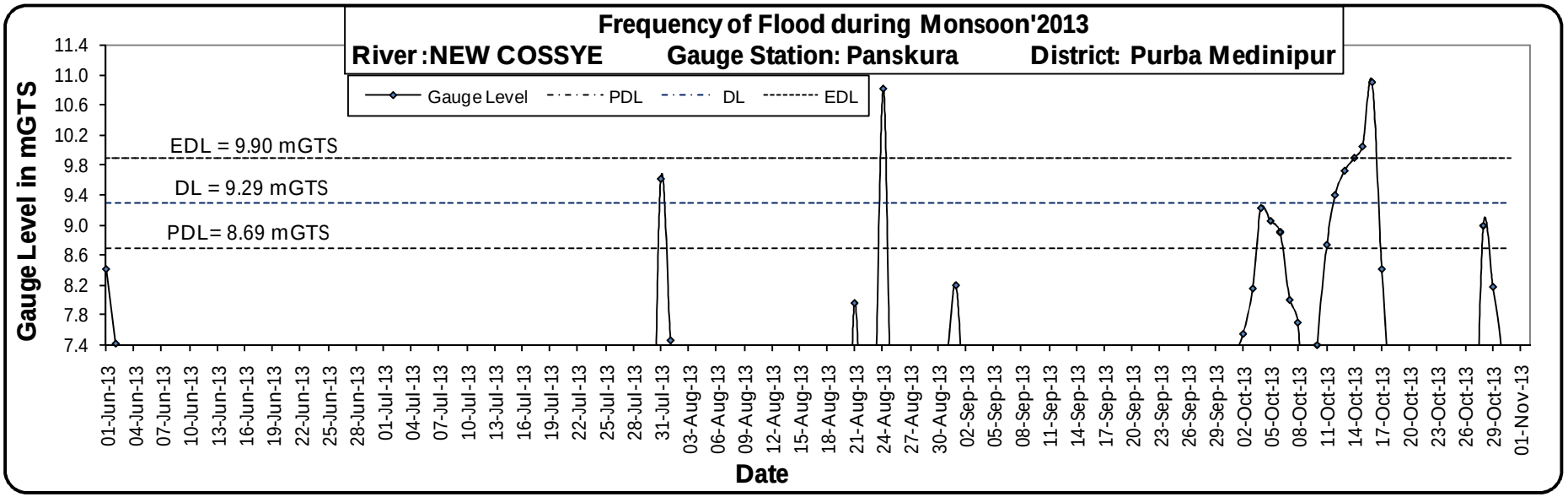

Frequency of Flood during Monsoon'2013
River: SHILABATI
Gauge Station: Banka
District: Paschim Medinipur
EDL = 15.69 mGTS
DL = 15.02 mGTS
PDL= 14.35 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

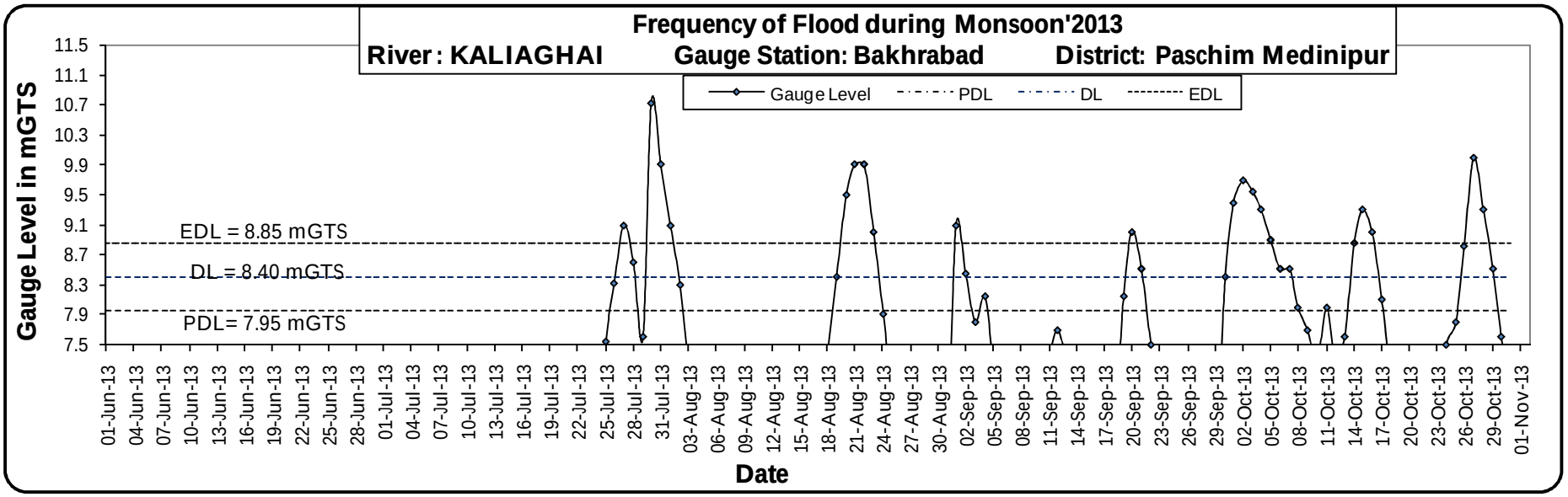

Frequency of Flood during Monsoon'2013
River: SHILABATI
Gauge Station: Gadghat
District: Paschim Medinipur
EDL = 9.60 mGTS
DL = 9.00 mGTS
PDL= 8.40 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

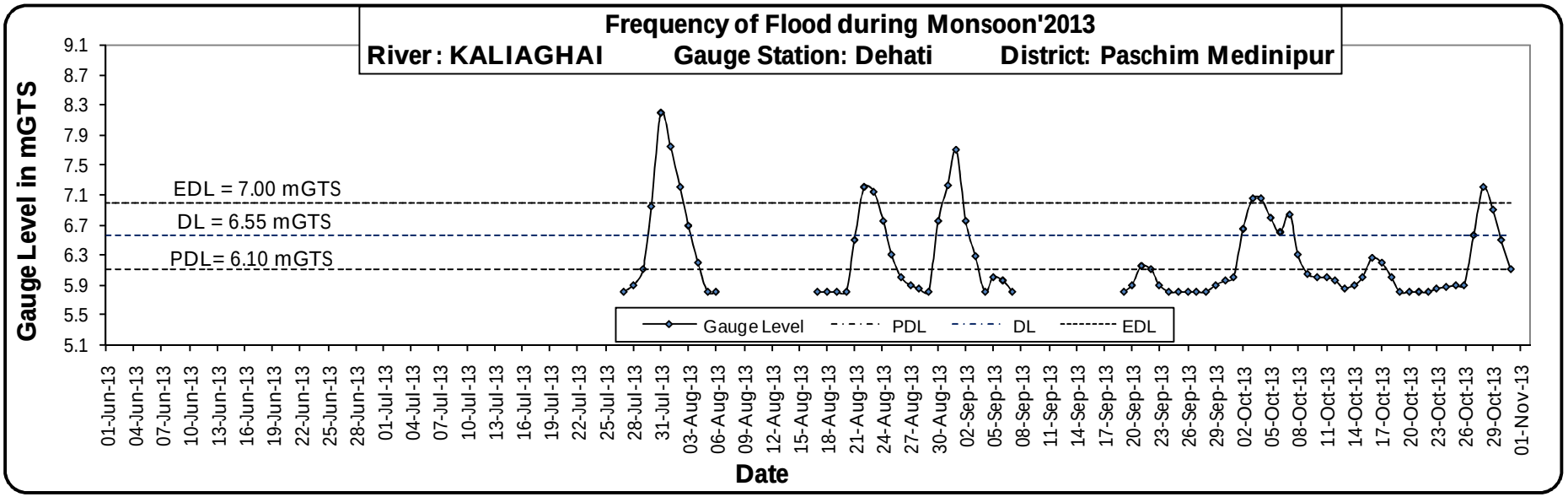

Frequency of Flood during Monsoon'2013
River: COSSYE
Gauge Station: Mohanpur
District: Paschim Medinipur
EDL = 26.36 mGTS
DL = 25.75 mGTS
PDL= 25.14 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

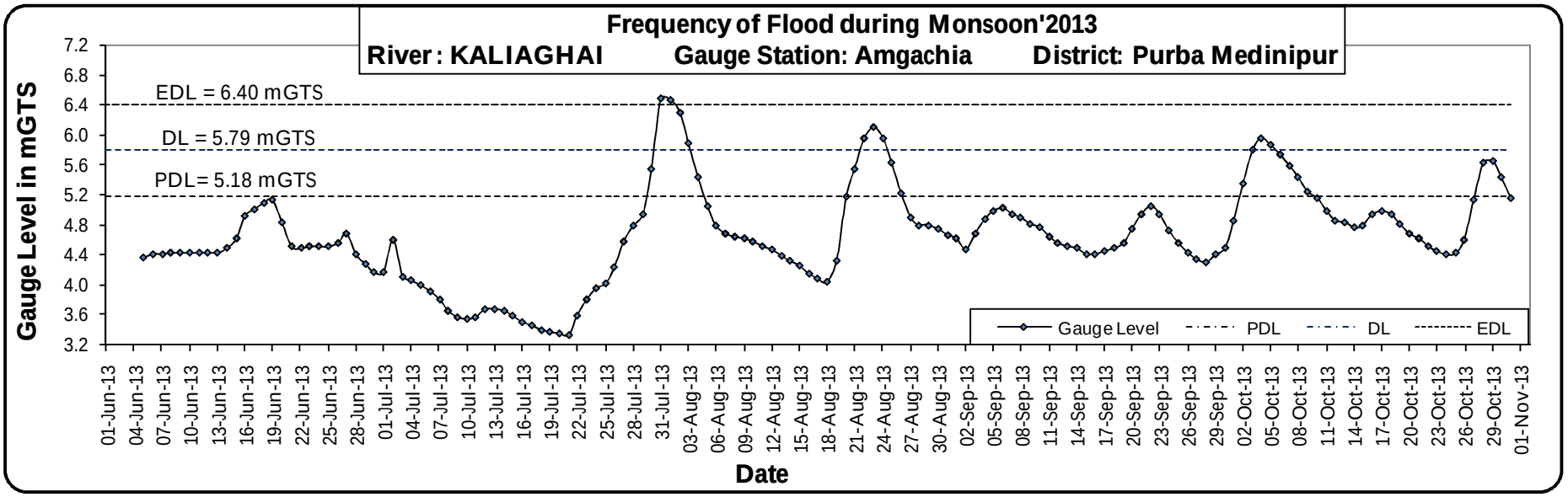

Frequency of Flood during Monsoon'2013
River: COSSYE
Gauge Station: Kapastikri
District: Paschim Medinipur
EDL = 16.61 mGTS
DL = 16.00 mGTS
PDL= 15.39 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

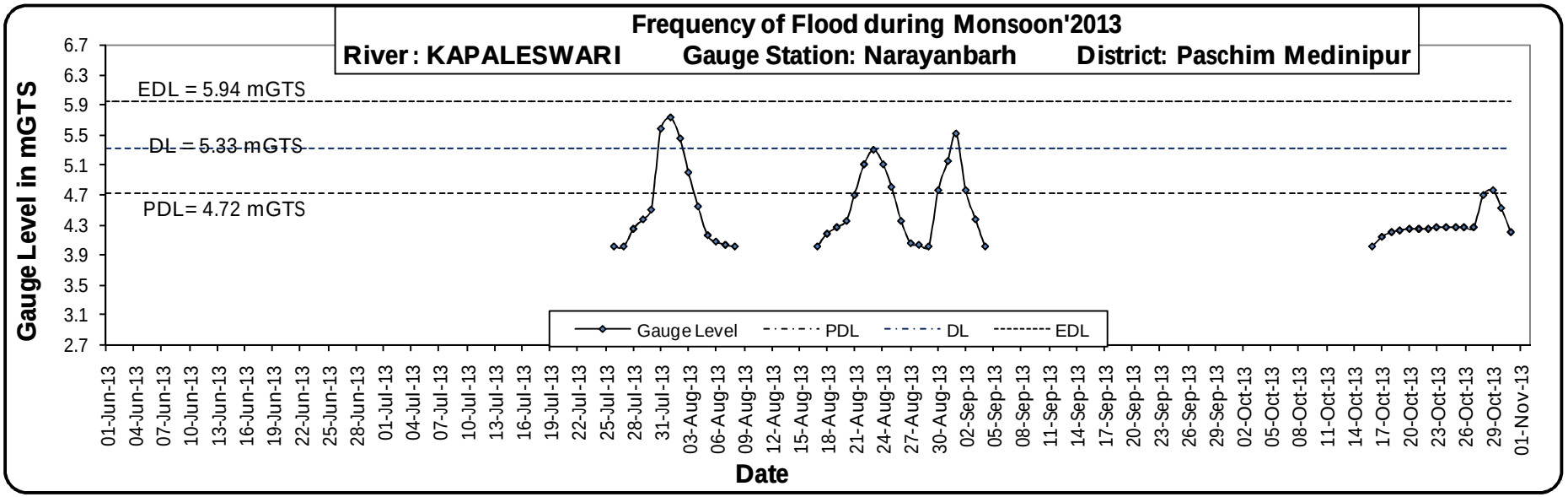

Frequency of Flood during Monsoon'2013
River: OLD COSSYE
Gauge Station: Kalmijole
District: Paschim Medinipur
Gauge Level in mGTS
EDL = 9.90 mGTS
DL = 9.29 mGTS
PDL= 8.69 mGTS
Gauge Level
PDL
DL
EDL
Date

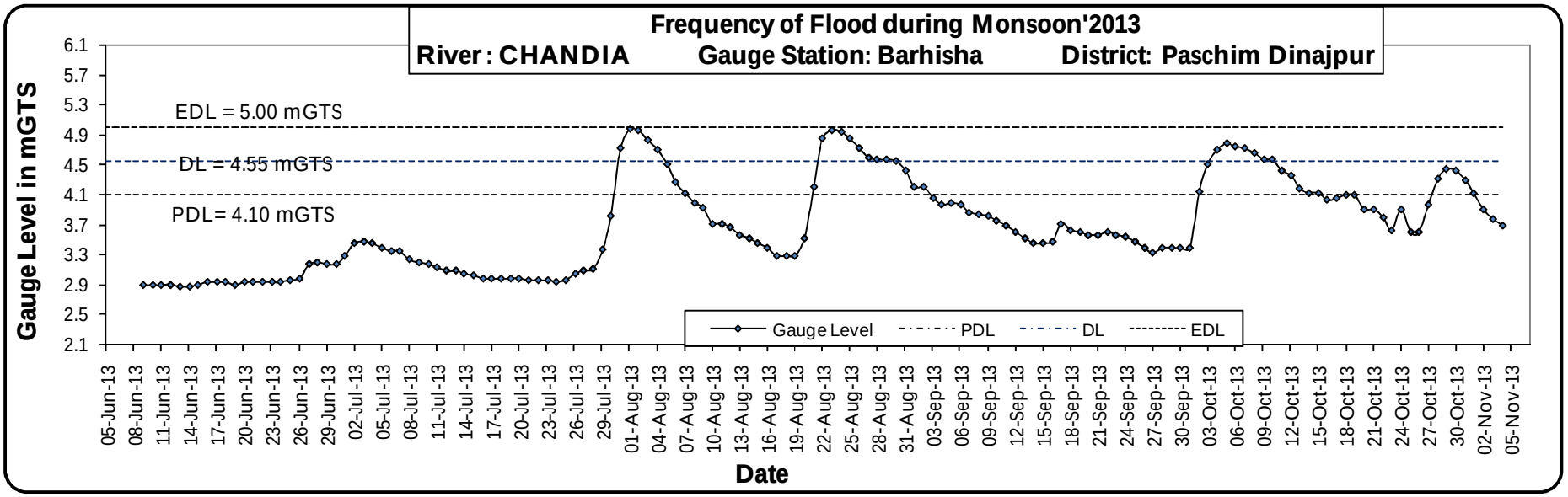

Frequency of Flood during Monsoon'2013
River :NEW COSSYE
Gauge Station: Panskura
District: Purba Medinipur
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
EDL = 9.90 mGTS
DL = 9.29 mGTS
PDL= 8.69 mGTS
Date

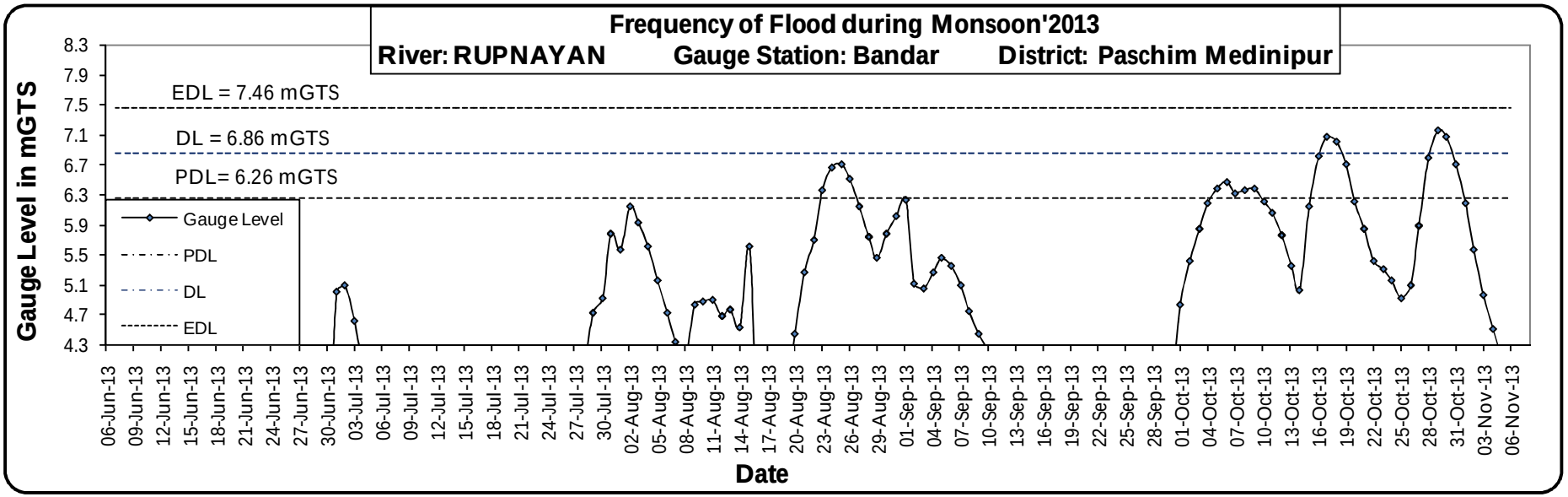

Frequency of Flood during Monsoon'2013
River : KALIAGHAI
Gauge Station: Bakhrabad
District: Paschim Medinipur
Gauge Level
PDL
DL
EDL
EDL = 8.85 mGTS
DL = 8.40 mGTS
PDL= 7.95 mGTS
Gauge Level in mGTS
Date

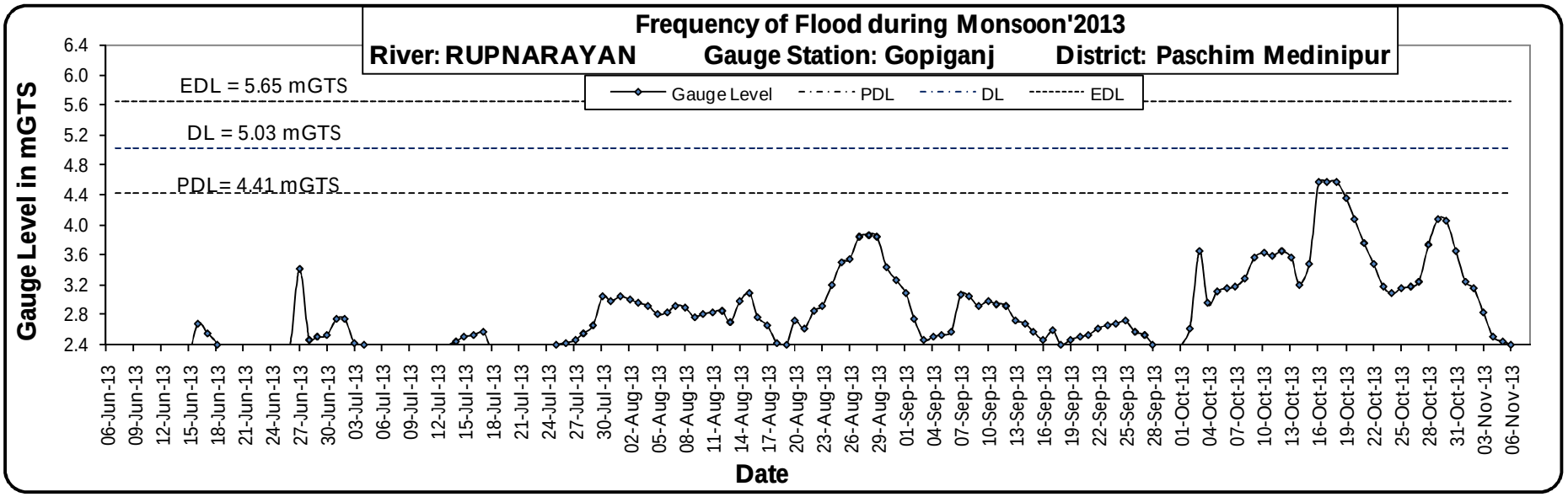

Frequency of Flood during Monsoon'2013
River : KALIAGHAI
Gauge Station: Dehati
District: Paschim Medinipur
Gauge Level
PDL
DL
EDL
EDL = 7.00 mGTS
DL = 6.55 mGTS
PDL= 6.10 mGTS
Gauge Level in mGTS
Date

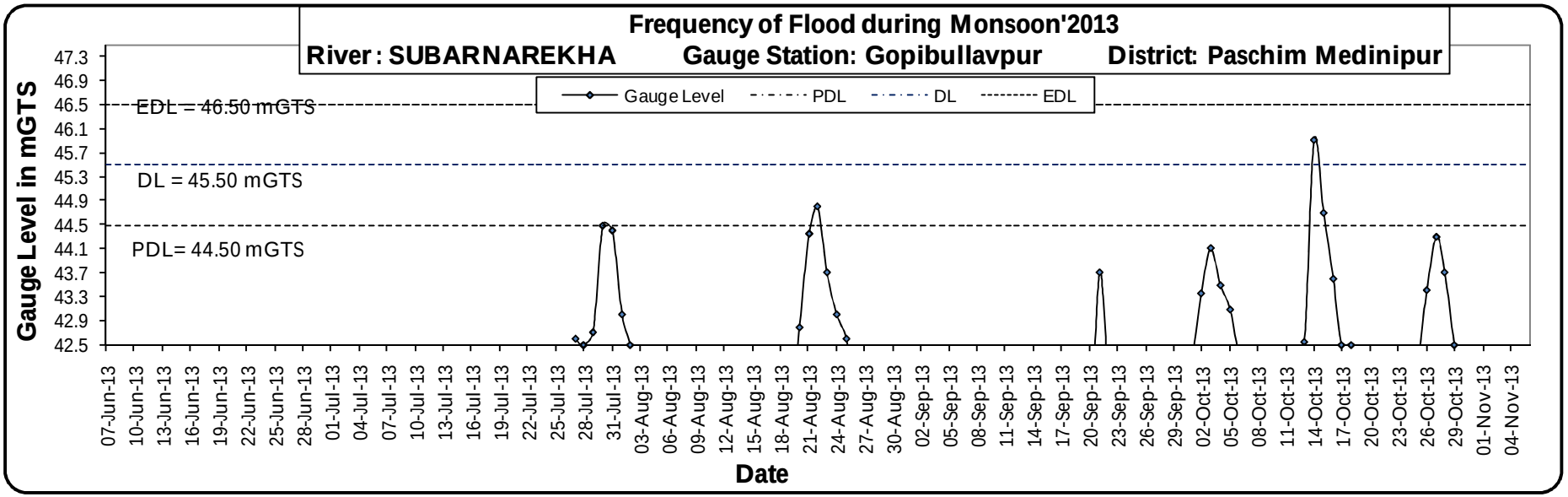

Frequency of Flood during Monsoon'2013
River : KALIAGHAI
Gauge Station: Amgachia
District: Purba Medinipur
EDL = 6.40 mGTS
DL = 5.79 mGTS
PDL= 5.18 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

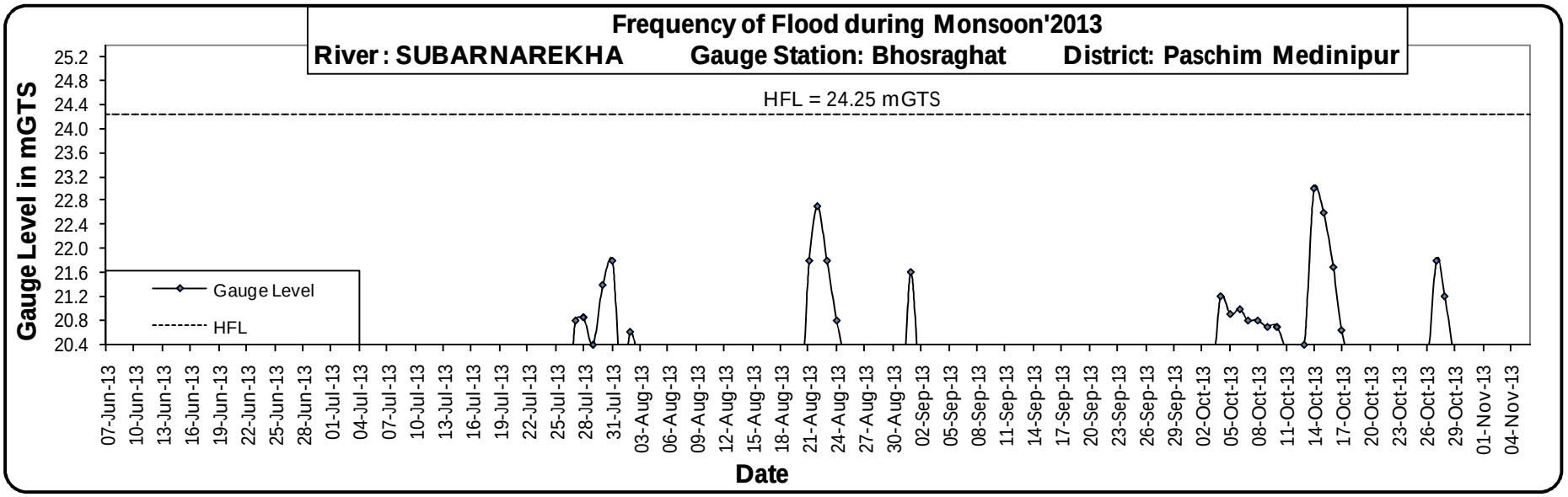

Frequency of Flood during Monsoon'2013
River : KAPALESWARI
Gauge Station: Narayanbarh
District: Paschim Medinipur
EDL = 5.94 mGTS
DL = 5.33 mGTS
PDL= 4.72 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

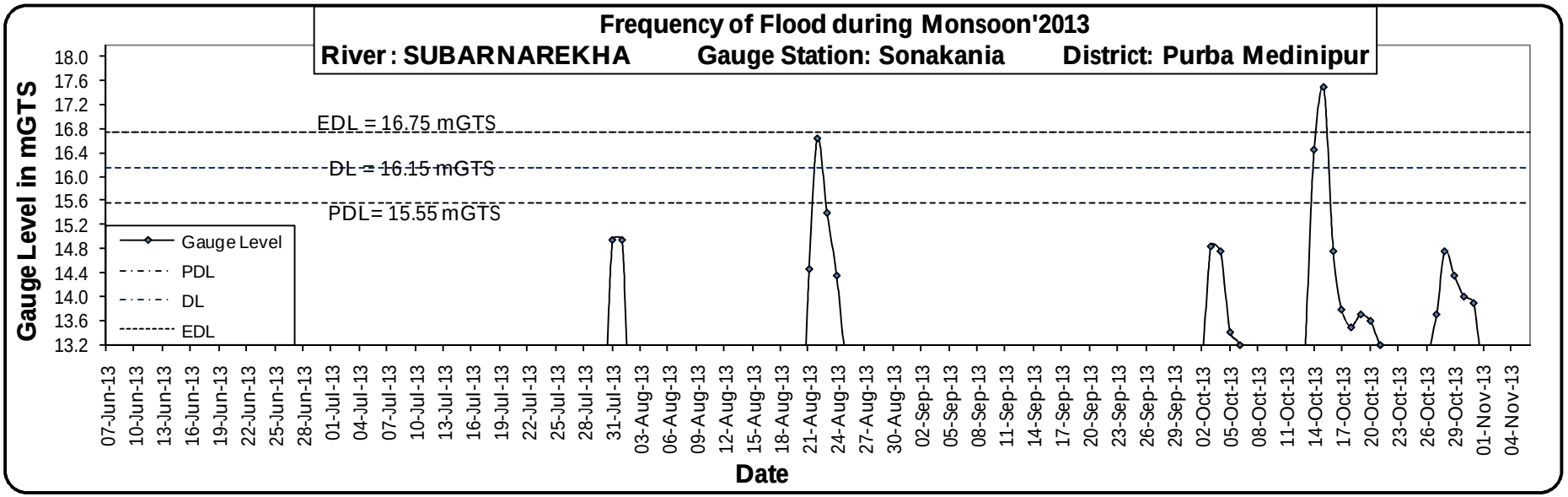

Frequency of Flood during Monsoon'2013
River : CHANDIA
Gauge Station: Barhisha
District: Paschim Dinajpur
EDL = 5.00 mGTS
DL = 4.55 mGTS
PDL= 4.10 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

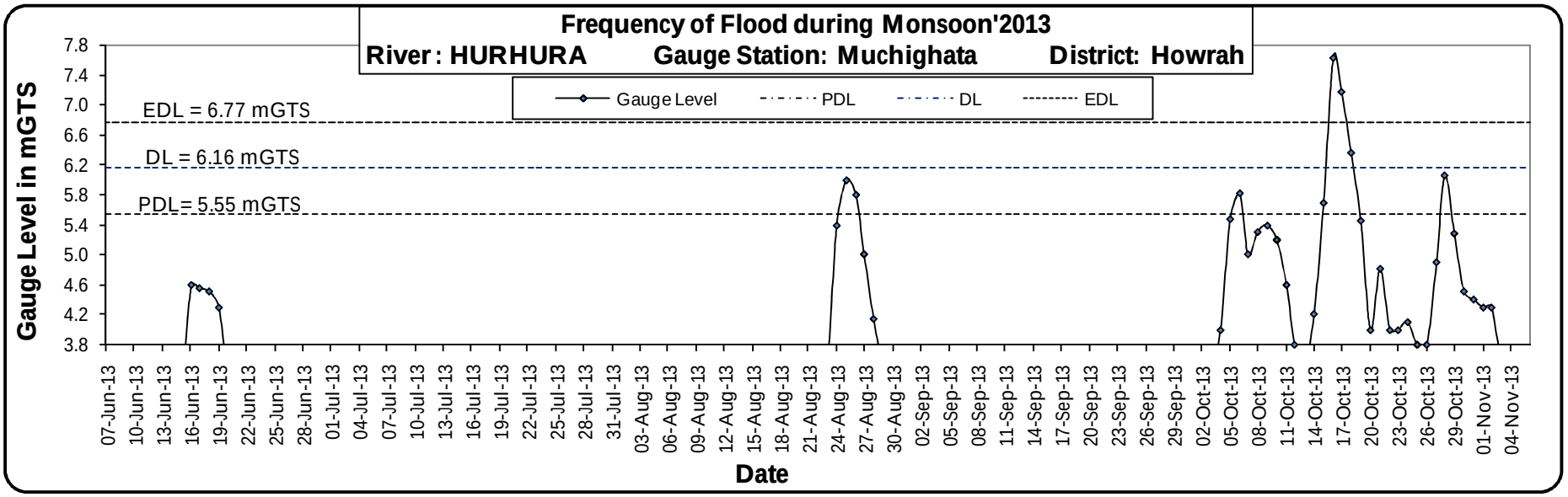

Frequency of Flood during Monsoon'2013
River: RUPNAYAN
Gauge Station: Bandar
District: Paschim Medinipur
EDL = 7.46 mGTS
DL = 6.86 mGTS
PDL= 6.26 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

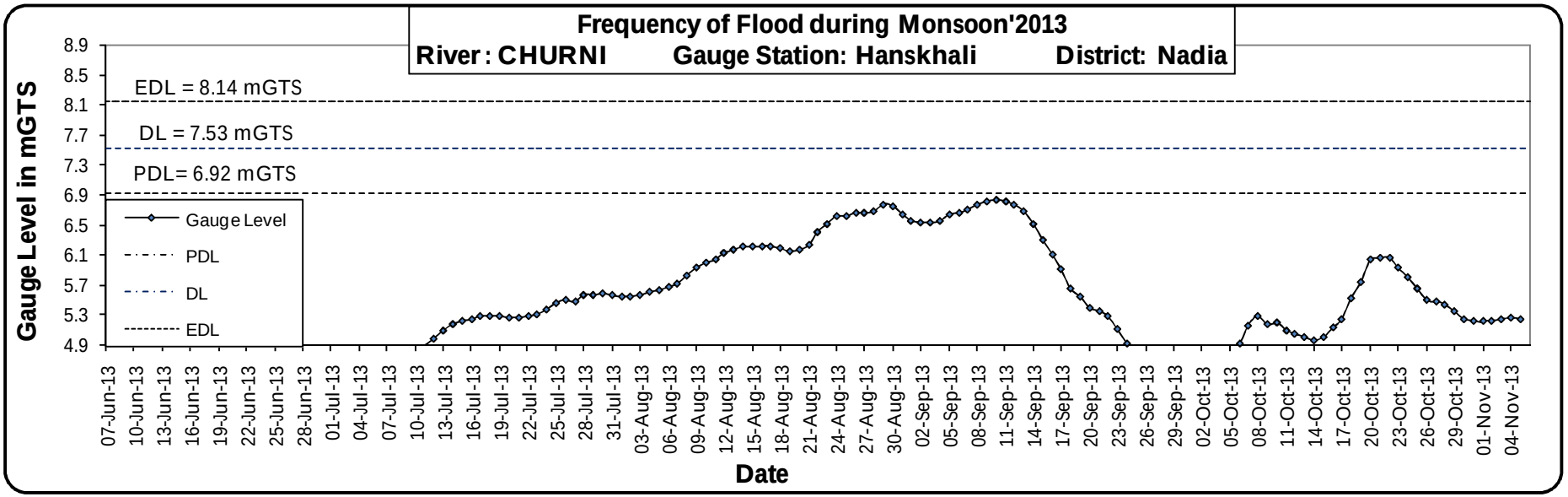

Frequency of Flood during Monsoon'2013
River: RUPNARAYAN
Gauge Station: Gopiganj
District: Paschim Medinipur
Gauge Level
PDL
DL
EDL
EDL = 5.65 mGTS
DL = 5.03 mGTS
PDL= 4.41 mGTS
Gauge Level in mGTS
Date

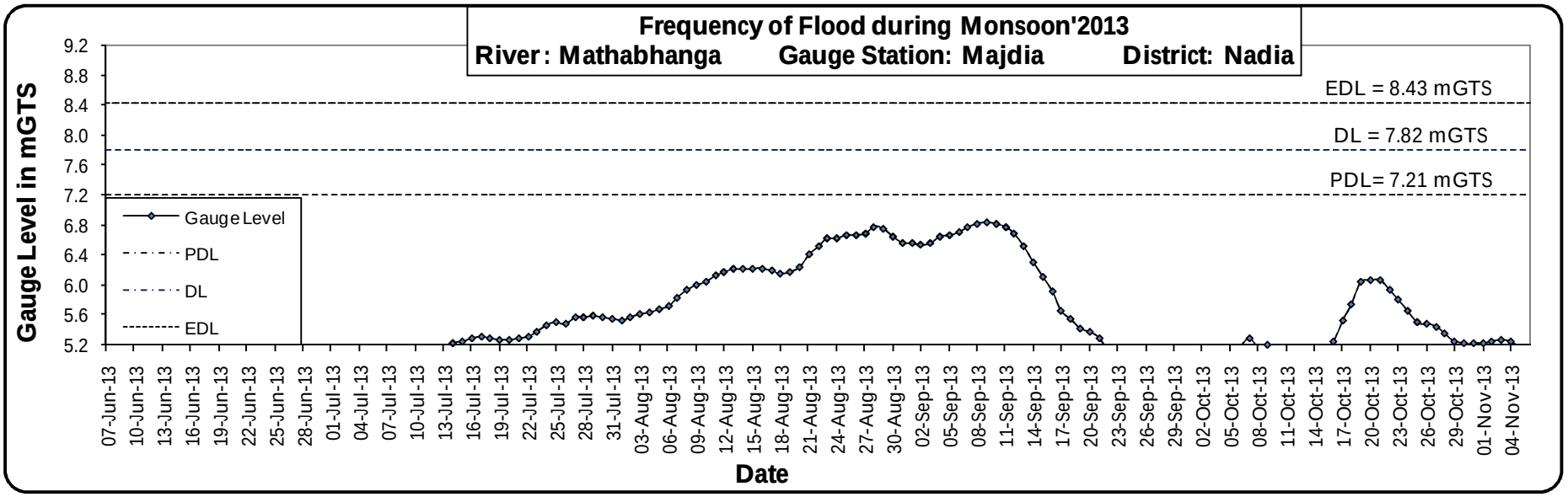

Frequency of Flood during Monsoon'2013
River : SUBARNAREKHA
Gauge Station: Gopibullavpur
District: Paschim Medinipur
Gauge Level
PDL
DL
EDL
EDL = 46.50 mGTS
DL = 45.50 mGTS
PDL= 44.50 mGTS
Gauge Level in mGTS
Date

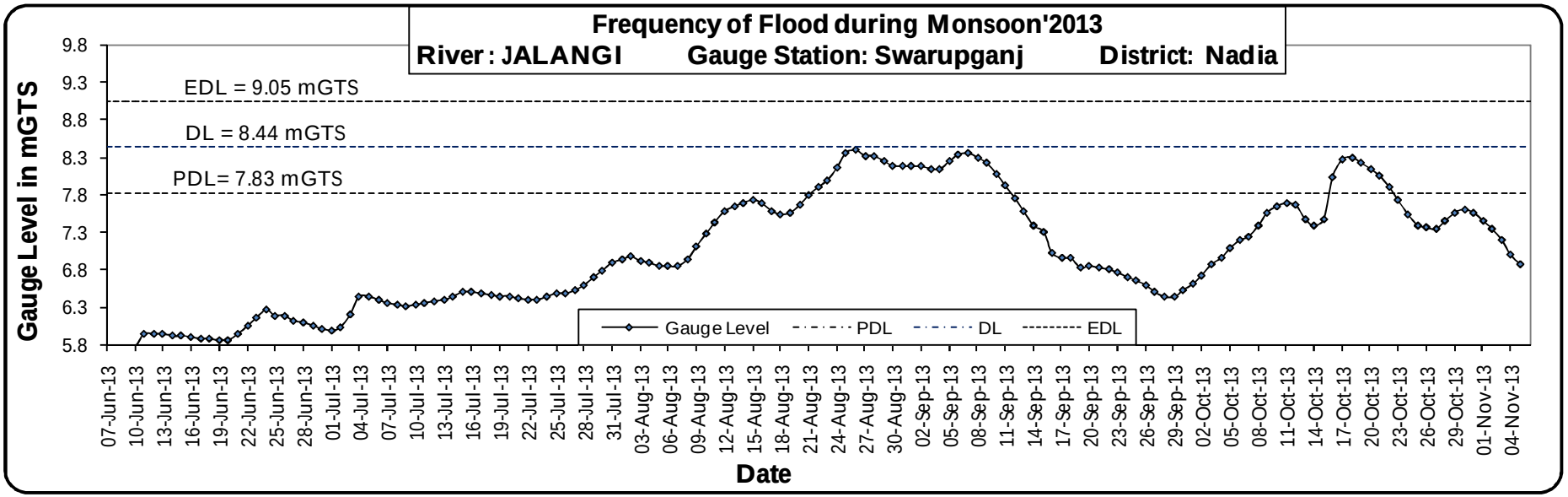

Frequency of Flood during Monsoon'2013
River : SUBARNAREKHA
Gauge Station: Bhosraghat
District: Paschim Medinipur
HFL = 24.25 mGTS
Gauge Level
HFL
Gauge Level in mGTS
Date

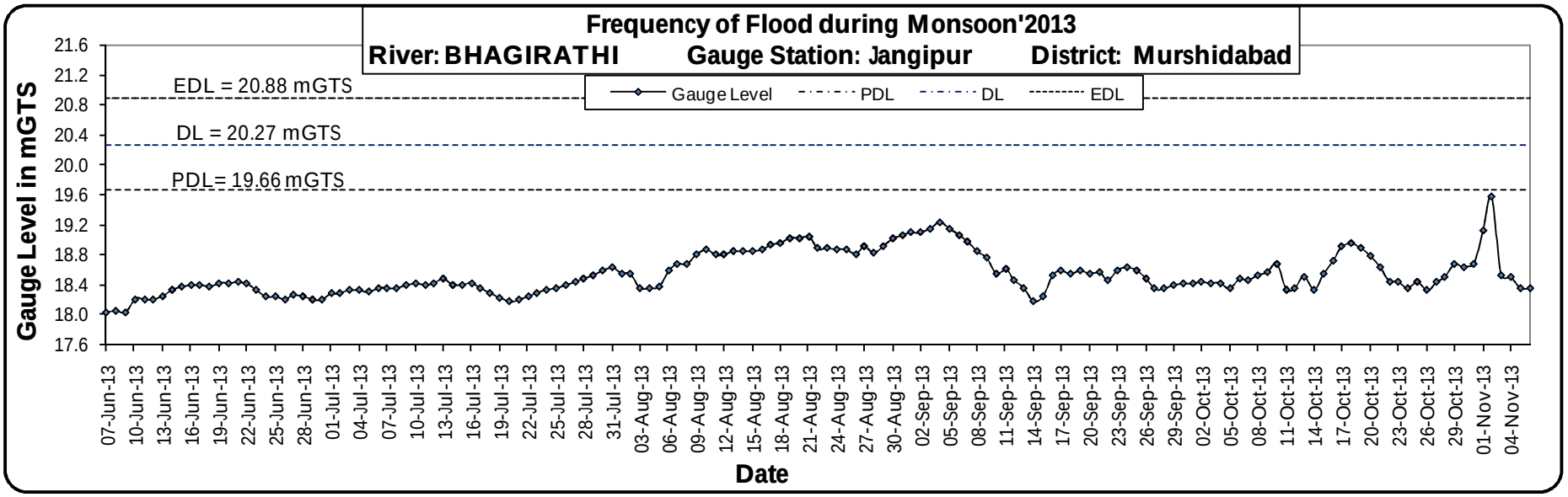

Frequency of Flood during Monsoon'2013
River : SUBARNAREKHA
Gauge Station: Sonakania
District: Purba Medinipur
EDL = 16.75 mGTS
DL = 16.15 mGTS
PDL= 15.55 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

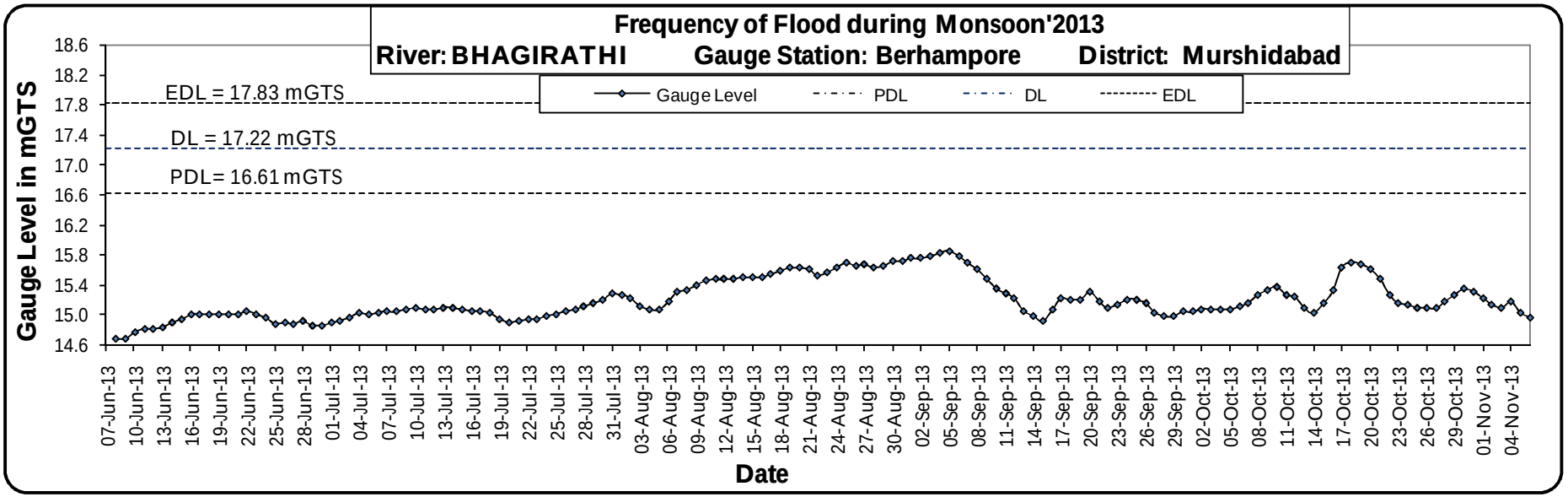

Frequency of Flood during Monsoon'2013
River : HURHURA
Gauge Station: Muchighata
District: Howrah
Gauge Level
PDL
DL
EDL
EDL = 6.77 mGTS
DL = 6.16 mGTS
PDL= 5.55 mGTS
Gauge Level in mGTS
Date


Frequency of Flood during Monsoon'2013
River : CHURNI
Gauge Station: Hanskhali
District: Nadia
Gauge Level
PDL
DL
EDL
EDL = 8.14 mGTS
DL = 7.53 mGTS
PDL= 6.92 mGTS
Gauge Level in mGTS
Date


Frequency of Flood during Monsoon'2013
River : Mathabhanga Gauge Station: Majdia District: Nadia
EDL = 8.43 mGTS
DL = 7.82 mGTS
PDL= 7.21 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date


Frequency of Flood during Monsoon'2013
River : JALANGI Gauge Station: Swarupganj District: Nadia
EDL = 9.05 mGTS
DL = 8.44 mGTS
PDL= 7.83 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date


Frequency of Flood during Monsoon'2013
River: BHAGIRATHI Gauge Station: Jangipur District: Murshidabad
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
EDL = 20.88 mGTS
DL = 20.27 mGTS
PDL= 19.66 mGTS
21.6
21.2
20.8
20.4
20.0
19.6
19.2
18.8
18.4
18.0
17.6
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
04-Nov-13
Date


Frequency of Flood during Monsoon'2013
River: BHAGIRATHI Gauge Station: Berhampore District: Murshidabad
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
EDL = 17.83 mGTS
DL = 17.22 mGTS
PDL= 16.61 mGTS
18.6
18.2
17.8
17.4
17.0
16.6
16.2
15.8
15.4
15.0
14.6
07-Jun-13
10-Jun-13
13-Jun-13
16-Jun-13
19-Jun-13
22-Jun-13
25-Jun-13
28-Jun-13
01-Jul-13
04-Jul-13
07-Jul-13
10-Jul-13
13-Jul-13
16-Jul-13
19-Jul-13
22-Jul-13
25-Jul-13
28-Jul-13
31-Jul-13
03-Aug-13
06-Aug-13
09-Aug-13
12-Aug-13
15-Aug-13
18-Aug-13
21-Aug-13
24-Aug-13
27-Aug-13
30-Aug-13
02-Sep-13
05-Sep-13
08-Sep-13
11-Sep-13
14-Sep-13
17-Sep-13
20-Sep-13
23-Sep-13
26-Sep-13
29-Sep-13
02-Oct-13
05-Oct-13
08-Oct-13
11-Oct-13
14-Oct-13
17-Oct-13
20-Oct-13
23-Oct-13
26-Oct-13
29-Oct-13
01-Nov-13
04-Nov-13
Date

RESERVOIR LEVEL IN ft	1	2	3	4	5	6	7
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM
CONSERVATION / POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00
June 1, 2013	211.5	#VALUE!	NA	418.9	#VALUE!	190.5	#VALUE!
June 2, 2013	211.5	NA	NA	420.0	367.6	200.3	#VALUE!
June 3, 2013	211.5	NA	NA	420.5	368.2	202.4	#VALUE!
June 4, 2013	211.5	NA	NA	420.8	368.3	203.6	#VALUE!
June 5, 2013	211.5	412.6	462.2	421.0	368.3	203.9	848.4
June 6, 2013	211.5	412.5	462.4	421.0	368.4	204.1	848.3
June 7, 2013	211.5	412.6	462.6	421.0	368.5	204.2	848.5
June 8, 2013	211.5	NA	NA	421.0	368.9	204.9	NA
June 9, 2013	211.5	NA	NA	421.0	369.0	205.7	NA
June 10, 2013	211.5	413.5	463.8	420.9	369.0	204.8	849.1
June 11, 2013	211.5	413.3	463.6	421.2	369.0	205.0	851.0
June 12, 2013	211.5	413.1	463.5	421.3	369.1	205.1	852.0
June 13, 2013	211.5	412.2	463.2	421.3	369.1	205.0	852.3
June 14, 2013	211.5	410.8	462.7	421.5	369.2	205.0	851.7
June 15, 2013	211.5	409.7	462.1	421.6	369.2	205.6	NA
June 16, 2013	211.5	407.0	461.0	421.6	369.3	205.0	851.0
June 17, 2013	211.5	408.3	461.5	421.6	369.3	205.0	851.4
June 18, 2013	211.5	406.4	460.7	421.8	369.3	204.9	850.6
June 19, 2013	211.5	406.2	460.4	422.0	369.3	205.0	850.3
June 20, 2013	211.5	406.1	460.2	421.9	369.7	205.2	849.8
June 21, 2013	211.5	406.7	460.8	422.3	369.9	204.1	849.4
June 22, 2013	211.5	407.0	461.9	422.7	369.9	204.6	849.1
June 23, 2013	211.5	406.9	462.4	423.2	369.9	205.1	849.0
June 24, 2013	211.5	406.5	462.6	423.3	370.0	205.1	849.1
June 25, 2013	211.5	406.7	462.6	424.0	370.0	205.0	849.1
June 26, 2013	211.5	406.7	462.6	424.0	369.9	205.0	849.1
June 27, 2013	211.5	406.9	462.3	424.1	370.0	205.3	848.9
June 28, 2013	211.5	407.0	462.3	424.4	370.1	205.4	849.3
June 29, 2013	211.5	407.0	462.3	424.5	370.1	205.0	849.3
June 30, 2013	211.5	407.8	462.3	424.7	370.2	205.2	849.6

INFLOW IN CUSEC	1	2	3	4	5	6	7
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJOR E DAM	TILPARA BARRAGE	TENUGHAT DAM
CONSERVATION / POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00
June 1, 2013	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
June 2, 2013	2150	#VALUE!	#VALUE!	#VALUE!	1963.9	564	#VALUE!
June 3, 2013	2150	#VALUE!	#VALUE!	NA	NA	NA	#VALUE!
June 4, 2013	2650	#VALUE!	#VALUE!	2521	NA	NA	#VALUE!
June 5, 2013	2650	3031	1194	1194	151	242	137.7976824
June 6, 2013	2650	3031	0	0	151	64	13.45265208
June 7, 2013	3725	2469	909	0	151	65	742.4264
June 8, 2013	3725	NA	NA	0	1200	446.5	NA
June 9, 2013	3725	NA	NA	0	454	548	NA
June 10, 2013	2650	NA	NA	0	300	128.5	2078.48
June 11, 2013	3725	2943	2448	1869	0	137	8798
June 12, 2013	3725	3520	296	923	0	137	4712
June 13, 2013				461	0	0	
June 14, 2013	13400	2992	1253	0	300	0	1472
June 15, 2013	13400	3584	1344	916	NA	NA	NA
June 16, 2013	15550	4798	650	13	0	0	118
June 17, 2013	1689	2920	356	467	NA	NA	1257
June 18, 2013	13400	3744	0	0	0	0	1009
June 19, 2013	4801	4032	712	1845	0	0	1187
June 20, 2013	6815	4659	1112	1845	1050	394	552
June 21, 2013	4801	6322	875	5607	3601	1432	910
June 22, 2013	9102	5844	NA	4204	150	934	1155
June 23, 2013	9099	5047	3455	2808	0	513	261
June 24, 2013	4801	3673	0	1869	0	0	2644
June 25, 2013	4665	1606	2268	4204	0	72	330
June 26, 2013	4665	1606	2268	4204	0	73	330
June 27, 2013	2651	1554	71	1121	0	0	1337
June 28, 2013	3726	176	608	1869	4194	1740	619
June 29, 2013	2650	2562	1222	934	0	1530	1081
June 30, 2013	2247	2043	2599	1869	175	153	636

OUTFLOW IN CUSEC	1	2	3	4	5	6	7
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM
CONSERVATION / POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00
June 1, 2013	1500	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0	#VALUE!
June 2, 2013	2150	#VALUE!	#VALUE!	#VALUE!	0	0	#VALUE!
June 3, 2013	2150	#VALUE!	#VALUE!	0	0	NA	#VALUE!
June 4, 2013	2150	#VALUE!	#VALUE!	0	0	NA	#VALUE!
June 5, 2013	2150	3030	0	0	0	0	157
June 6, 2013	2150	3030	0	0	0	0	157
June 7, 2013	3225	1511	0	0	0	0	157
June 8, 2013	3225	NA	NA	0	0	0	NA
June 9, 2013	3225	NA	NA	0	0	0	NA
June 10, 2013	2150	2000	0	0	0	0	38
June 11, 2013	3225	3627	766	0	0	0	0
June 12, 2013	3225	4838	768	0	0	0	0
June 13, 2013	12900	10000	2500	0	0	0	0
June 14, 2013	12900	9704	2355	0	0	0	2927
June 15, 2013	12900	9704	2355	NA	NA	NA	NA
June 16, 2013	15050	12035	2297	0	0	0	118
June 17, 2013	16129	11904	2460	0	0	0	2821
June 18, 2013	12900	3744	0	0	0	0	1009
June 19, 2013	4301	5068	1292	0	0	0	2707
June 20, 2013	6815	5186	1549	0	0	177	2693
June 21, 2013	4801	6322	0	0	0	177	910
June 22, 2013	8602	4581	NA	0	0	522	2483
June 23, 2013	9099	5412	1515	0	0	176	559
June 24, 2013	4801	6746	0	0	0	0	66
June 25, 2013	4665	0	1516	0	0	0	182
June 26, 2013	4665	0	1516	0	0	0	182
June 27, 2013	2151	0	1377	0	0	0	66
June 28, 2013	3226	0	1168	0	0	0	179
June 29, 2013	1075	0	1520	0	0	0	182
June 30, 2013	2247	0	2019	0	0	0	182

RESERVOIR LEVEL IN ft	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION / POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
July 1, 2013	211.5	408.3	462.5	425.3	370.5	204.9	849.6	NA	NA
July 2, 2013	211.5	408.6	463.3	425.8	370.8	205.4	849.6	585.5	NA
July 3, 2013	211.5	409.0	463.5	426.0	371.0	205.2	849.8	585.2	300.8
July 4, 2013	211.5	409.2	463.5	426.2	371.1	205.1	849.9	585.2	302.1
July 5, 2013	211.5	410.4	463.2	426.3	371.2	205.2	849.8	585.3	301.8
July 6, 2013	211.5	410.5	462.8	426.4	371.3	205.3	849.8	585.3	301.8
July 7, 2013	211.5	410.7	462.6	426.5	371.4	205.0	849.9	585.3	301.9
July 8, 2013	211.5	410.8	462.4	426.5	371.3	205.2	849.8	585.0	301.8
July 9, 2013	211.5	410.3	462.5	426.5	371.4	205.1	850.1	585.0	301.8
July 10, 2013	211.5	409.0	462.7	426.5	371.4	205.1	850.2	584.8	301.9
July 11, 2013	211.4	409.2	462.9	426.4	371.4	205.0	850.6	584.5	301.8
July 12, 2013	211.5	409.4	464.0	426.4	371.5	205.0	851.2	584.7	301.9
July 13, 2013	211.5	409.7	464.9	426.5	371.5	204.9	851.9	584.6	301.8
July 14, 2013	211.5	409.3	465.3	426.6	371.5	204.9	852.0	584.5	301.8
July 15, 2013	211.5	406.7	465.6	426.5	371.5	204.9	852.0	584.3	301.8
July 16, 2013	211.5	408.6	465.7	426.7	371.6	204.6	852.4	584.3	301.8
July 17, 2013	211.5	408.6	465.6	426.7	371.6	204.6	852.5	584.1	301.8
July 18, 2013	211.5	408.3	465.5	426.8	371.6	204.7	852.6	584.2	302.2
July 19, 2013	211.5	407.9	465.3	426.8	371.6	204.7	852.6	584.0	301.8
July 20, 2013	211.5	407.8	465.0	426.8	371.6	204.7	852.6	584.0	301.8
July 21, 2013	211.5	407.2	464.7	426.8	371.6	204.7	852.6	584.0	301.8
July 22, 2013	211.5	406.5	464.3	426.9	371.5	204.7	852.5	583.8	302.2
July 23, 2013	211.5	405.8	463.7	426.7	371.5	204.7	852.5	583.7	301.8
July 24, 2013	211.5	405.2	463.2	426.5	371.5	204.7	852.6	583.7	301.8
July 25, 2013	211.5	404.5	462.7	425.9	371.5	205.0	852.6	583.7	301.8
July 26, 2013	211.5	404.6	462.1	425.6	371.4	205.2	852.5	583.7	302.2
July 27, 2013	211.5	406.5	461.7	425.4	371.4	205.3	852.3	583.7	301.8
July 28, 2013	211.5	407.9	461.4	425.5	371.5	205.4	854.2	584.6	292.0
July 29, 2013	211.5	410.0	461.2	425.7	371.6	205.3	852.3	585.1	288.1
July 30, 2013	211.5	411.4	461.4	428.0	371.8	204.5	852.0	585.5	291.4
July 31, 2013	211.5	435.0	495.0	440.0	398.0	206.0	882.0	629.9	332.2

INFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION / POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
July 1, 2013	4801	1660	4309	5608	0	0	66	NA	NA
July 2, 2013	3993	2100	5300	4204	1225	354	485	NA	NA
July 3, 2013	3322	2215	3269	2336	525	76	1095	NA	2649
July 4, 2013	2651	1695	2188	1372	514	59	66	NA	NA
July 5, 2013	3328	7315	1774	1869	525	183	123	NA	NA
July 6, 2013	5877	1872	1095	0	0	0	66	NA	NA
July 7, 2013	3726	1872	989	623	0	0	66	NA	NA
July 8, 2013	2043	875	711	0	0	145	183	N.A	N.A
July 9, 2013	2043	1353	1050	0	175	0	1405	N.A	N.A
July 10, 2013	5877	3249	2614	0	0	0	66	N.A.	N.A
July 11, 2013	5874	674	1827	0	175	0	3298	N.A	N.A
July 12, 2013	3725	1731	0	0	0	0	1440	0	0
July 13, 2013	1575	1731	2755	467	0	0	67	0	0
July 14, 2013	1856	1937	2088	467	0	0	995	0	0
July 15, 2013	4801	318	2790	467	0	0	67	0	0
July 16, 2013	2651	0	0	467	196	0	67	NA	NA
July 17, 2013	2253	703	682	0	50	0	677	NA	NA
July 18, 2013	550	0	0	467	75	0	67	NA	NA
July 19, 2013	2301	0	0	467	73	0	1480	NA	NA
July 20, 2013	3051	0	1166	0	75	0	67	NA	NA
July 21, 2013	4051	494	0	0	0	0	67	NA	NA
July 22, 2013	6302	1483	0	623	100	0	67	NA	NA
July 23, 2013	8052	0	0	702	100	0	67	NA	NA
July 24, 2013	6052	1731	1100	3476	100	0	67	NA	NA
July 25, 2013	8552	896	0	360	125	0	1480	NA	NA
July 26, 2013	6552	1413	0	5356	125	1740	2250	NA	NA
July 27, 2013	5000	10950	0	2514	125	0	2514	NA	NA
July 28, 2013	3251	12715	812	6414	0	0	4479	NA	NA
July 29, 2013	7502	22075	989	17063	125	500	2105	NA	NA
July 30, 2013	11678	13033	2543	25077	125	89	2736	NA	NA
July 31, 2013	17104	5616	1272	24477	4326	500	1325	NA	NA

OUTFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION / POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
July 1, 2013	4301	0	1695	0	0	525	66	NA	NA
July 2, 2013	3993	0	1496	0	0	0	182	442	NA
July 3, 2013	3322	82	2501	0	0	221	183	424	2649
July 4, 2013	2151	0	2036	0	0	130	66	441	2650
July 5, 2013	3328	0	2983	0	0	110	183	442	1766
July 6, 2013	5375	0	2402	0	0	0	66	442	1766
July 7, 2013	3226	0	2296	0	0	173	66	442	1024
July 8, 2013	2387	0	1365	0	0	0	183	442	777
July 9, 2013	1984	4597	323	0	0	0	183	442	509
July 10, 2013	5376	4980	0	0	0	0	66	440	777
July 11, 2013	5874	2656	462	0	0	0	184	440	777
July 12, 2013	3226	0	8088	0	0	0	67	440	777
July 13, 2013	1075	0	0	0	0	0	67	440	777
July 14, 2013	1075	4123	0	0	0	0	186	439	777
July 15, 2013	4301	3638	0	0	0	0	67	438	1018
July 16, 2013	2151	0	0	0	0	0	67	438	777
July 17, 2013	550	0	0	0	0	0	703	438	777
July 18, 2013	50	2972	1484	0	0	0	67	438	777
July 19, 2013	50	0	0	0	0	0	67	437	777
July 20, 2013	50	0	2578	0	0	0	67	437	777
July 21, 2013	50	5263	0	0	0	0	67	437	777
July 22, 2013	50	6110	0	0	0	0	67	436	781
July 23, 2013	50	6004	0	0	0	0	67	435	777
July 24, 2013	50	6110	2460	0	0	0	67	435	1272
July 25, 2013	50	3815	0	5968	0	0	67	435	1018
July 26, 2013	50	0	1554	0	0	0	1164	435	10596
July 27, 2013	50	0	0	0	0	0	0	435	134216
July 28, 2013	50	6216	2084	0	0	300	4479	440	36803
July 29, 2013	50	6428	2225	0	0	500	5920	442	18720
July 30, 2013	3226	11055	0	0	0	500	1358	464	75938
July 31, 2013	8602	13139	0	0	0	500	1325	448	114790

RESERVOIR LEVEL IN ft	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
August 1, 2013	211.5	409.6	462.1	430.4	371.8	203.9	851.3	587.6	289.7
August 2, 2013	211.5	409.0	462.7	431.0	371.6	205.5	851.0	588.2	288.1
August 3, 2013	211.5	408.8	463.2	427.8	371.3	205.7	851.1	588.6	286.7
August 4, 2013	211.5	408.4	463.4	431.1	371.1	205.4	851.3	588.9	285.8
August 5, 2013	211.5	407.7	463.7	431.0	370.8	203.8	851.5	589.1	285.4
August 6, 2013	211.5	406.9	463.8	430.7	370.5	203.0	851.5	589.2	285.1
August 7, 2013	211.5	406.3	463.8	430.3	370.2	203.5	851.6	589.6	285.1
August 8, 2013	211.5	406.2	463.9	430.2	370.1	204.3	851.7	589.9	285.1
August 9, 2013	211.5	406.6	464.0	430.5	370.1	204.7	852.1	590.4	286.1
August 10, 2013	211.5	407.1	464.2	430.8	370.3	204.0	854.3	590.9	286.1
August 11, 2013	211.5	407.5	465.4	430.8	370.6	203.6	853.0	592.2	285.4
August 12, 2013	211.5	408.7	466.5	430.9	371.2	204.5	852.7	591.2	285.4
August 13, 2013	211.5	407.5	467.2	431.0	371.4	203.9	852.8	591.4	285.1
August 14, 2013	211.5	407.8	467.5	431.2	371.5	204.5	852.6	591.5	285.4
August 15, 2013	211.5	408.3	467.7	431.2	371.6	203.2	852.5	591.5	285.1
August 16, 2013	211.5	408.0	467.8	431.2	371.6	202.5	852.4	592.2	284.8
August 17, 2013	211.5	408.2	467.9	431.3	372.1	204.4	853.0	593.2	286.7
August 18, 2013	211.5	408.7	468.5	431.7	372.4	204.8	853.1	593.8	285.8
August 19, 2013	211.5	408.5	469.2	432.2	372.6	205.4	852.8	593.8	288.4
August 20, 2013	211.5	408.1	469.9	432.7	372.7	203.4	852.7	593.0	290.7
August 21, 2013	211.5	408.0	470.6	433.8	372.9	202.4	852.9	592.3	298.2
August 22, 2013	211.5	411.2	472.0	437.9	373.8	205.5	853.8	594.3	293.6
August 23, 2013	211.0	415.4	476.0	436.7	375.1	203.6	853.4	591.4	290.0
August 24, 2013	211.0	414.5	477.1	435.0	375.7	203.2	851.7	589.4	287.1
August 25, 2013	211.0	412.6	477.4	434.1	376.1	204.1	852.3	589.1	285.8
August 26, 2013	211.5	411.4	477.3	433.7	376.3	205.9	852.4	589.1	290.4
August 27, 2013	211.5	411.0	477.4	433.8	376.6	205.8	852.1	589.6	300.2
August 28, 2013	211.5	410.7	477.7	433.9	377.0	203.8	852.2	590.2	300.2
August 29, 2013	211.5	410.4	479.1	434.2	377.9	204.3	853.2	590.7	300.8
August 30, 2013	211.5	410.2	480.2	434.7	378.8	204.1	853.9	590.4	300.2
August 31, 2013	211.5	410.9	480.6	434.9	379.1	202.8	853.0	589.7	300.2

INFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
August 1, 2013	17104	8124	2578	9415	1582	249	1296	NA	NA
August 2, 2013	15354	6075	3921	10345	1779	1000	1266	NA	NA
August 3, 2013	10305	5510	1307	4730	1804	0	73	NA	NA
August 4, 2013	8402	3815	1307	3993	1919	1801	73	NA	NA
August 5, 2013	8052	2190	1342	2121	0	760	73	NA	NA
August 6, 2013	7052	2402	0	139	0	1000	73	NA	NA
August 7, 2013	7052	5015	0	868	103	600	2828	NA	NA
August 8, 2013	7727	6570	0	4503	628	900	73	NA	NA
August 9, 2013	9953	4627	1342	9923	297	0	2864	NA	NA
August 10, 2013	3051	6287	1342	5906	125	1054	1287	0	0
August 11, 2013	4051	6358	8336	3473	125	2341	876	0	0
August 12, 2013	5151	13104	4309	3349	8526	7613	1427	0	0
August 13, 2013	15904	5051	2932	2988	125	900	2774	N.A	N.A
August 14, 2013	13754	6428	2932	4451	125	1050	2726	N.A	N.A
August 15, 2013	1550	5404	1483	2137	125	303	3174	N.A	N.A
August 16, 2013	9953	3779	0	1528	125	1921	1326	N.A	N.A
August 17, 2013	8477	11938	1483	372	4326	0	4275	N.A	N.A
August 18, 2013	9802	10419	5969	8848	125	1800	1443	N.A	N.A
August 19, 2013	11953	9713	6075	6414	125	2501	23	N.A	N.A
August 20, 2013	18555	7664	3073	18145	125	1261	1427	N.A	N.A
August 21, 2013	13404	12574	6464	26954	125	2121	1445	N.A	N.A
August 22, 2013	22006	67285	18366	55504	4626	15148	6529	N.A	N.A
August 23, 2013	37060	37157	17236	8524	4876	12183	5546	N.A	N.A
August 24, 2013	51532	19179	11973	10973	75	2016	2583	N.A	N.A
August 25, 2013	43511	19179	11973	10973	75	2016	2583	N.A	N.A
August 26, 2013	27907	6958	1872	337	75	1546	1156	N.A	N.A
August 27, 2013	18055	6923	2826	4806	125	2778	1139	N.A	N.A
August 28, 2013	17129	8689	6075	8252	5543	777	2559	N.A	N.A
August 29, 2013	15554	9430	6075	13255	5526	1318	4076	N.A	N.A
August 30, 2013	20930	8441	2225	6752	127	1337	2713	N.A	N.A
August 31, 2013	8552	5757	2084	5932	150	1100	1882	N.A	N.A

OUTFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
August 1, 2013	8602	13316	0	0	0	500	1296	454	50931
August 2, 2013	8592	9465	0	0	1779	1792	3482	457	28256
August 3, 2013	4301	7170	0	0	1804	0	73	458	12751
August 4, 2013	2151	7099	0	0	1869	1801	73	460	4511
August 5, 2013	50	7029	0	0	1793	2200	199	461	2649
August 6, 2013	50	7099	0	0	1779	1000	73	461	868
August 7, 2013	50	6570	0	0	1789	0	73	463	868
August 8, 2013	3226	6570	0	0	0	900	73	465	7052
August 9, 2013	6452	0	0	0	172	0	73	467	16080
August 10, 2013	50	0	0	0	0	0	1287	469	16080
August 11, 2013	50	0	0	0	0	568	8009	470	9707
August 12, 2013	2151	13104	0	0	0	9143	1427	826	9707
August 13, 2013	12903	13068	0	0	0	0	1362	472	6946
August 14, 2013	10753	0	0	0	125	1050	1344	472	9707
August 15, 2013	50	5404	0	0	0	1150	1335	472	6946
August 16, 2013	6452	5404	0	0	0	0	1326	475	4511
August 17, 2013	3226	5404	0	0	0	0	1414	480	23443
August 18, 2013	4301	5404	0	0	0	0	1443	483	12761
August 19, 2013	6452	13033	0	0	0	0	1436	19132	45482
August 20, 2013	15054	9289	0	0	0	2701	1427	68918	83556
August 21, 2013	12903	9289	0	20000	0	0	1445	31184	254940
August 22, 2013	21506	21757	0	40869	0	0	6529	128829	173873
August 23, 2013	36560	34861	6181	49200	0	7862	9890	157068	125225
August 24, 2013	51032	34861	6287	24622	0	3457	6397	32629	76579
August 25, 2013	43011	19603	4274	9820	0	0	1149	11423	56335
August 26, 2013	23656	10879	5687	5241	0	0	1156	459	27027
August 27, 2013	15054	8830	3108	0	0	532	1139	459	10508
August 28, 2013	16129	8689	4132	0	0	1017	1146	560	10596
August 29, 2013	15054	13139	1554	0	0	518	1215	13303	38803
August 30, 2013	20430	6464	2225	0	0	515	1264	13049	47226
August 31, 2013	4301	1978	2084	0	0	0	6156	5983	28336

RESERVOIR LEVEL IN ft	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
September 1, 2013	211.5	412.7	480.7	434.9	379.4	201.8	852.9	589.6	296.9
September 2, 2013	211.5	413.2	480.6	434.7	379.7	201.5	852.6	589.9	300.2
September 3, 2013	211.5	413.1	480.6	434.6	381.0	205.2	852.3	590.5	300.8
September 4, 2013	211.5	412.5	480.5	434.6	382.2	202.4	852.1	590.2	300.2
September 5, 2013	211.5	412.0	480.5	434.6	382.8	202.6	852.4	589.6	300.2
September 6, 2013	211.5	411.8	480.7	433.8	383.1	201.6	853.0	589.7	300.2
September 7, 2013	211.5	412.1	480.7	433.0	383.2	200.2	853.3	589.9	301.2
September 8, 2013	211.5	412.2	480.4	432.5	383.3	201.3	853.4	590.2	300.5
September 9, 2013	211.5	412.5	480.2	432.4	383.4	202.6	853.5	590.2	300.2
September 10, 2013	211.5	412.8	480.0	432.3	383.6	203.6	853.7	590.4	300.5
September 11, 2013	211.5	413.1	479.8	432.3	383.8	204.8	853.6	590.5	301.5
September 12, 2013	211.5	413.3	479.4	432.5	383.8	205.5	853.3	590.9	301.5
September 13, 2013	211.5	413.5	478.8	432.6	383.9	205.1	852.9	591.0	300.2
September 14, 2013	211.5	413.6	478.4	432.7	383.9	204.6	852.5	591.2	300.2
September 15, 2013	211.5	413.9	488.2	432.8	384.0	202.7	852.5	591.4	300.2
September 16, 2013	211.5	413.8	478.3	433.0	383.7	202.2	852.7	591.5	300.2
September 17, 2013	211.5	413.8	478.2	433.1	383.6	203.3	852.9	591.5	300.2
September 18, 2013	211.5	413.6	477.7	433.2	383.2	203.5	853.2	591.7	300.2
September 19, 2013	211.5	413.7	477.4	433.4	382.8	205.5	853.4	591.9	300.2
September 20, 2013	211.5	413.7	477.0	434.0	383.0	204.8	853.9	592.0	301.8
September 21, 2013	211.5	414.2	476.7	434.3	383.3	202.3	854.1	592.5	300.2
September 22, 2013	211.5	414.8	476.3	434.8	383.2	203.6	854.3	592.0	300.2
September 23, 2013	211.5	415.0	476.1	435.3	382.8	205.5	853.8	591.5	300.5
September 24, 2013	211.5	415.1	476.3	435.5	382.2	205.1	853.3	590.7	300.2
September 25, 2013	211.5	415.2	476.2	435.3	381.5	205.0	853.4	589.7	301.8
September 26, 2013	211.5	414.9	476.1	435.2	380.9	204.9	853.6	589.9	300.2
September 27, 2013	211.5	414.9	476.2	435.0	380.7	203.5	853.8	590.5	301.2
September 28, 2013	211.5	415.0	476.3	434.9	380.8	203.2	854.1	591.2	300.8
September 29, 2013	211.5	415.7	476.6	435.1	380.8	203.0	853.8	591.9	300.2
September 30, 2013	211.5	416.9	477.2	436.1	381.1	202.6	853.4	592.2	300.5

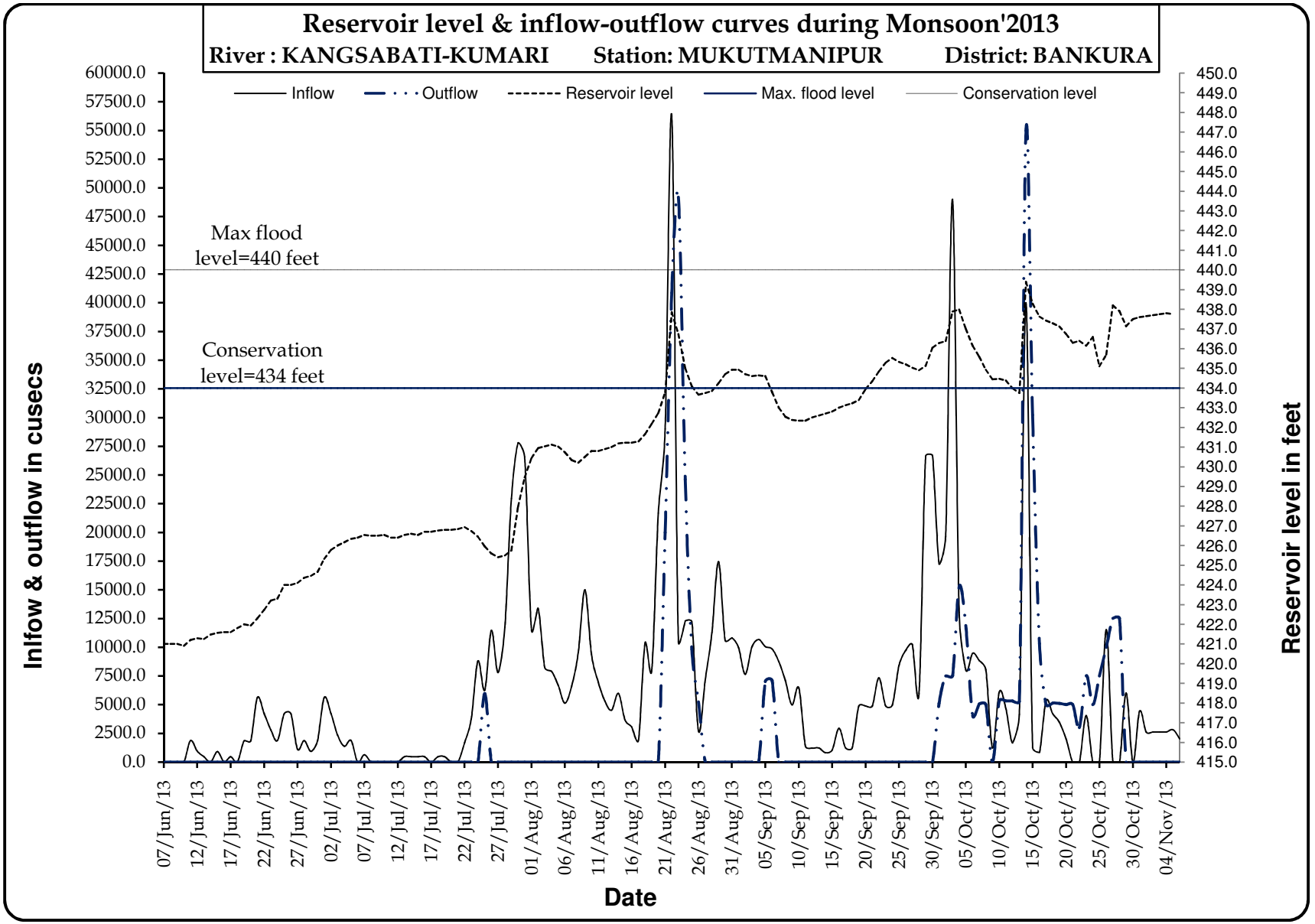
INFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
September 1, 2013	8552	10384	2084	4896	5851	1300	1671	N.A	N.A
September 2, 2013	9301	7700	0	2615	5851	1050	1638	N.A	N.A
September 3, 2013	13404	8795	1307	5033	11252	6590	1605	N.A	N.A
September 4, 2013	24156	10879	2119	5637	5251	1	1582	N.A	N.A
September 5, 2013	22006	9042	4238	5032	5251	1977	70	N.A	N.A
September 6, 2013	8952	3497	1519	4889	7651	330	70	N.A	N.A
September 7, 2013	3576	2013	2013	3370	150	1500	70	N.A	N.A
September 8, 2013	4051	0	0	1731	0	1170	70	N.A	N.A
September 9, 2013	5551	2084	0	1456	150	1320	70	N.A	N.A
September 10, 2013	3551	4203	1519	2924	150	1438	71	N.A	N.A
September 11, 2013	4551	2792	2080	1385	1088	690	2400	N.A	N.A
September 12, 2013	6052	6428	0	1220	150	0	1713	N.A	N.A
September 13, 2013	7552	4274	71	1220	150	600	228	N.A	N.A
September 14, 2013	11153	6605	1448	813	150	600	0	N.A	N.A
September 15, 2013	7552	5333	0	1045	593	120	74	N.A	N.A
September 16, 2013	4551	2331	0	2927	2319	1000	74	N.A	N.A
September 17, 2013	3551	0	71	1220	101	1200	74	N.A	N.A
September 18, 2013	5551	0	0	1220	3032	4081	74	N.A	N.A
September 19, 2013	7552	2155	177	4878	0	3301	74	N.A	N.A
September 20, 2013	7052	2155	1801	4878	385	2608	1779	N.A	N.A
September 21, 2013	8552	6605	0	4878	569	380	1804	N.A	N.A
September 22, 2013	8552	6746	4804	7318	2284	2641	1814	N.A	N.A
September 23, 2013	9252	3355	0	4878	3882	3001	1769	N.A	N.A
September 24, 2013	7552	6746	1872	3434	1257	3601	269	N.A	N.A
September 25, 2013	6552	4486	0	3434	0	3801	74	N.A	N.A
September 26, 2013	7552	4486	0	4214	12014	3801	74	N.A	N.A
September 27, 2013	7552	4486	0	4214	12014	3801	74	N.A	N.A
September 28, 2013	8552	6746	0	0	150	300	3006	N.A	N.A
September 29, 2013	8552	16000	0	20622	150	600	2584	N.A	N.A
September 30, 2013	10653	17589	3815	20639	150	200	1733	N.A	N.A

OUTFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
September 1, 2013	4301	0	2084	0	0	0	1671	556	22181
September 2, 2013	4301	3426	1236	0	0	0	1638	558	2826
September 3, 2013	12903	15188	1307	0	0	5290	1605	13176	7417
September 4, 2013	23656	15011	2119	0	0	1971	1582	12920	38487
September 5, 2013	21506	13068	2119	7000	0	476	70	556	47227
September 6, 2013	6452	3497	1519	7084	0	0	70	558	12751
September 7, 2013	1075	0	2013	0	0	0	70	559	7293
September 8, 2013	50	0	318	0	0	0	70	560	7154
September 9, 2013	50	0	0	0	0	0	70	560	9918
September 10, 2013	50	0	1519	0	0	0	71	561	7154
September 11, 2013	50	880	2932	0	0	0	2860	562	16196
September 12, 2013	50	0	1236	0	0	0	1713	558	26503
September 13, 2013	50	0	2049	0	0	0	1676	564	11334
September 14, 2013	2151	4486	1448	0	0	0	1627	565	9918
September 15, 2013	50	3179	0	0	443	0	74	566	9890
September 16, 2013	50	6640	0	0	2169	1000	74	567	7084
September 17, 2013	50	0	71	0	0	0	74	567	7084
September 18, 2013	50	0	3603	0	4319	0	74	568	4250
September 19, 2013	50	0	2084	0	0	0	74	568	8501
September 20, 2013	50	0	3673	0	0	0	1779	569	108970
September 21, 2013	50	0	4309	0	0	0	1804	14619	70840
September 22, 2013	50	0	6675	0	0	0	1814	14273	47227
September 23, 2013	50	3355	0	0	3725	3001	1769	13917	34341
September 24, 2013	50	6746	0	0	3693	0	1717	13303	36364
September 25, 2013	50	6746	0	0	0	0	74	558	39130
September 26, 2013	50	6746	0	0	4230	0	74	558	4250
September 27, 2013	50	6746	0	0	0	0	74	562	14587
September 28, 2013	50	6746	0	0	0	0	75	565	16536
September 29, 2013	50	6675	0	0	0	0	1774	568	29280
September 30, 2013	2151	5475	0	0	0	0	1733	7480	48650

RESERVOIR LEVEL IN ft	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
October 1, 2013	211.5	419.0	477.5	436.3	381.4	204.2	854.0	592.8	301.2
October 2, 2013	211.5	419.8	478.0	436.4	381.9	205.2	855.7	593.2	296.6
October 3, 2013	211.5	420.8	478.7	437.9	382.2	205.0	860.6	593.8	292.0
October 4, 2013	211.0	422.1	485.9	438.0	382.5	205.1	856.7	592.3	290.7
October 5, 2013	211.0	422.5	479.8	437.0	382.9	203.9	854.0	592.2	289.4
October 6, 2013	211.5	423.9	480.4	436.1	383.3	204.4	853.8	592.2	288.1
October 7, 2013	211.5	423.6	482.2	435.6	383.8	202.6	852.3	592.5	300.2
October 8, 2013	211.5	423.8	483.6	434.9	384.0	202.4	852.6	593.0	292.3
October 9, 2013	211.5	423.0	484.4	434.4	384.2	203.0	852.8	593.5	300.5
October 10, 2013	211.5	422.6	484.9	434.5	384.3	202.1	852.9	593.5	294.9
October 11, 2013	211.5	422.0	485.3	434.4	384.4	202.2	852.8	592.2	294.3
October 12, 2013	211.5	420.3	485.4	434.0	384.5	202.0	852.6	590.1	293.6
October 13, 2013	211.5	417.9	485.4	433.8	384.6	201.5	852.5	587.3	291.0
October 14, 2013	211.0	425.7	486.3	439.4	385.3	202.8	856.1	594.3	302.5
October 15, 2013	210.0	428.8	494.8	438.3	389.3	203.4	854.8	595.8	290.4
October 16, 2013	210.0	427.1	494.5	437.6	390.5	203.1	852.8	594.6	288.7
October 17, 2013	211.0	426.3	494.4	437.4	391.0	203.0	853.9	592.8	287.1
October 18, 2013	211.0	425.6	494.2	437.3	391.3	203.0	854.5	592.2	284.4
October 19, 2013	211.0	424.5	493.8	437.1	391.5	204.9	854.8	592.7	284.1
October 20, 2013	211.5	424.3	493.5	436.8	391.7	205.1	NA	N.A.	N.A.
October 21, 2013	211.5	424.3	493.4	436.3	391.8	204.6	NA	N.A.	N.A.
October 22, 2013	211.5	424.3	493.2	436.4	392.0	204.3	NA	N.A.	N.A.
October 23, 2013	211.5	424.8	492.9	436.2	392.1	203.6	N.A.	N.A.	N.A.
October 24, 2013	211.5	N.A.	N.A.	436.6	392.2	203.3	N.A.	N.A.	N.A.
October 25, 2013	211.5	N.A.	N.A.	435.1	392.4	203.1	N.A.	N.A.	N.A.
October 26, 2013	211.5	422.6	491.8	435.7	392.7	203.8	N.A.	595.5	290.0
October 27, 2013	211.0	422.0	491.3	438.2	393.1	204.6	N.A.	593.8	292.0
October 28, 2013	211.5	422.1	491.0	437.9	393.4	204.5	N.A.	591.2	287.7
October 29, 2013	211.5	420.5	490.8	437.2	393.5	203.5	N.A.	592.2	284.1
October 30, 2013	211.5	422.0	490.5	437.5	393.6	205.0	N.A.	592.8	284.1
October 31, 2013	211.5	421.4	490.1	437.6	393.7	205.2	N.A.	593.2	284.1

INFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
October 1, 2013	11803	23841	1943	11177	50	1730	4686	N.A	N.A
October 2, 2013	18405	23912	3850	13566	5451	800	10929	N.A	N.A
October 3, 2013	43061	73395	1943	42841	50	2100	12237	N.A	N.A
October 4, 2013	62791	39982	1978	6878	50	2100	10089	N.A	N.A
October 5, 2013	37610	18826	0	1963	5138	510	1479	N.A	N.A
October 6, 2013	31158	16812	2119	3926	50	11261	1762	N.A	N.A
October 7, 2013	31308	16424	4415	3324	50	1952	367	N.A	N.A
October 8, 2013	30308	15965	0	2577	50	150	3042	N.A	N.A
October 9, 2013	27907	7594	0	1227	50	1492	4518	N.A	N.A
October 10, 2013	19305	9960	0	6091	100	0	1668	N.A	N.A
October 11, 2013	10703	8159	0	4634	100	600	1652	N.A	N.A
October 12, 2013	30058	8477	0	1661	100	720	1630	N.A	N.A
October 13, 2013	27907	6887	0	4152	0	600	7868	N.A	N.A
October 14, 2013	73919	236785	7064	40000	6401	3241	40241	N.A	N.A
October 15, 2013	163750	87488	12680	1270	18103	0	9736	N.A	N.A
October 16, 2013	120157	32282	7982	850	6701	4033	6248	N.A	N.A
October 17, 2013	47813	15929	4309	5318	100	2068	2958	N.A	N.A
October 18, 2013	38410	18543	4344	4212	100	1084	1839	N.A	N.A
October 19, 2013	38410	12079	4309	3465	100	1630	4805	N.A	N.A
October 20, 2013	16900	9554	4358	2000	750	1106	NA	N.A.	N.A.
October 21, 2013	18750	9433	5209	NA	1075	798	NA	N.A.	N.A.
October 22, 2013	17750	9408	4244	NA	1075	834	NA	N.A.	N.A.
October 23, 2013	17727	N.A.	N.A.	4040	1075	569	N.A.	N.A.	N.A.
October 24, 2013	22200	N.A.	N.A.	N.A.	750	545	N.A.	N.A.	N.A.
October 25, 2013	25500	N.A.	N.A.	N.A.	1075	580	N.A.	N.A.	N.A.
October 26, 2013	50200	9560	5920	11519	1725	1120	N.A.	N.A.	N.A.
October 27, 2013	43500	14080	4120	N.A.	2925	1259	N.A.	N.A.	N.A.
October 28, 2013	26300	13100	3488	N.A.	1625	987	N.A.	N.A.	N.A.
October 29, 2013	22000	10692	3868	6000	975	376	N.A.	N.A.	N.A.
October 30, 2013	22000	8784	3640	N.A.	975	980	N.A.	N.A.	N.A.
October 31, 2013	19850	4656	3392	4424	325	581	N.A.	N.A.	N.A.

OUTFLOW IN CUSEC	1	2	3	4	5	6	7	8	9
Dated	DURGAPUR BARRAGE	PANCHET DAM	MAITHON DAM	KANGSABATI DAM	MASSANJORE DAM	TILPARA BARRAGE	TENUGHAT DAM	CHANDIL DAM	EX-GALUDIH BARRAGE
CONSERVATION/ POND LEVEL LEVEL IN M./FT.	64.46 / 211.50	124.97 /410.00	146.31 / 480.00	134.11 / 440.00	121.34 / 398.00	62.79 / 206.00	263.66 / 865.00	629.76	(HFL) 332.1
October 1, 2013	4301	3214	0	5113	0	0	1790	14846	51532
October 2, 2013	12903	18578	0	7487	0	0	1958	29562	178934
October 3, 2013	36560	43373	0	7500	0	0	25128	61799	142324
October 4, 2013	54589	54287	0	15284	0	0	14822	39161	112406
October 5, 2013	30108	13033	0	11899	0	0	12449	17236	60858
October 6, 2013	23656	13775	0	4040	0	4141	1762	7480	40697
October 7, 2013	25807	19426	0	5051	0	1974	7431	7596	26447
October 8, 2013	25807	21969	0	4996	0	470	1630	7770	17766
October 9, 2013	23656	16388	0	0	0	492	1657	7933	30199
October 10, 2013	15054	12856	0	5331	0	0	1668	7933	2336
October 11, 2013	6452	19603	0	5320	0	0	1652	35117	72540
October 12, 2013	25807	27479	0	5320	0	0	1630	31134	65847
October 13, 2013	23656	32035	0	5278	0	0	7868	36733	89572
October 14, 2013	85000	70000	6000	55000	0	0	40000	38322	252538
October 15, 2013	163250	87488	12680	30217	0	13868	18602	45033	113872
October 16, 2013	119656	65307	7982	10310	0	4909	10486	43090	82296
October 17, 2013	43000	20000	12000	5000	0	2068	62	36253	60795
October 18, 2013	34409	25000	12000	5138	0	984	1839	7469	26464
October 19, 2013	34409	12000	6000	5109	0	0	1873	574	22172
October 20, 2013	12900	11654	6762	5000	0	527	NA	N.A.	N.A.
October 21, 2013	10750	10130	6004	5000	0	521	NA	N.A.	N.A.
October 22, 2013	10750	9408	5576	3000	0	0	NA	N.A.	N.A.
October 23, 2013	11827	N.A.	N.A.	7500	0	0	N.A.	N.A.	N.A.
October 24, 2013	17200	N.A.	N.A.	5000	0	0	N.A.	N.A.	N.A.
October 25, 2013	21500	20000	7000	7500	0	0	N.A.	N.A.	N.A.
October 26, 2013	49700	18880	8880	10000	0	0	N.A.	60044	99390
October 27, 2013	43000	19620	10024	12500	0	521	N.A.	72053	125139
October 28, 2013	25800	12128	6344	12500	0	1040	N.A.	4238	73501
October 29, 2013	21500	10368	5432	0	0	500	N.A.	4386	22172
October 30, 2013	21500	10400	5444	0	0	0	N.A.	4422	22172
October 31, 2013	19350	10416	5572	0	0	528	N.A.	4450	22172


Reservoir level & inflow-outflow curves during Monsoon'2013
River : KANGSABATI-KUMARI
Station: MUKUTMANIPUR
District: BANKURA
Inflow
Outflow
Reservoir level
Max. flood level
Conservation level
Max flood level=440 feet
Conservation level=434 feet
Inlfow & outflow in cusecs
Reservoir level in feet
Date
60000.0
57500.0
55000.0
52500.0
50000.0
47500.0
45000.0
42500.0
40000.0
37500.0
35000.0
32500.0
30000.0
27500.0
25000.0
22500.0
20000.0
17500.0
15000.0
12500.0
10000.0
7500.0
5000.0
2500.0
0.0
450.0
449.0
448.0
447.0
446.0
445.0
444.0
443.0
442.0
441.0
440.0
439.0
438.0
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436.0
435.0
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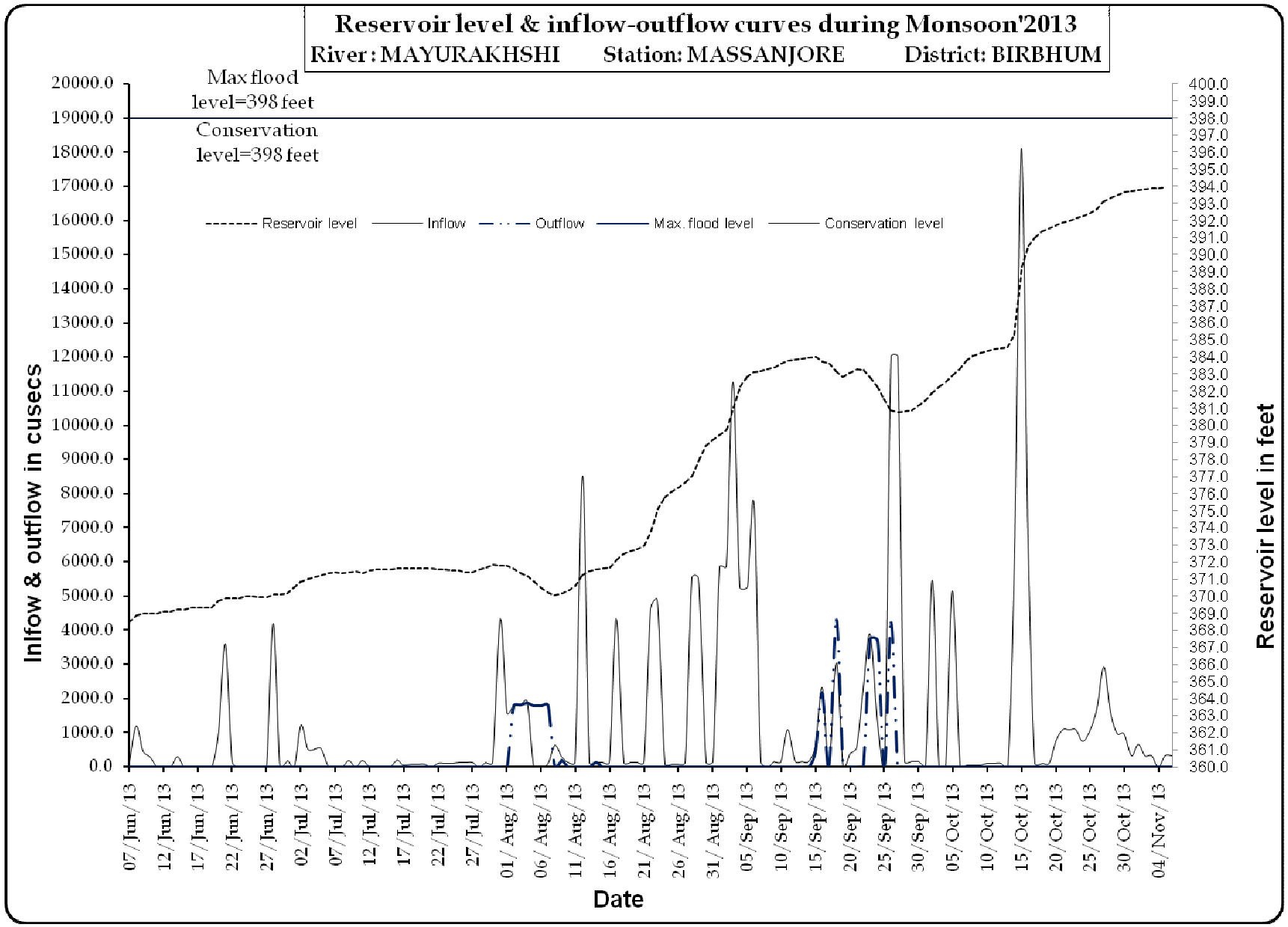
433.0
432.0
431.0
430.0
429.0
428.0
427.0
426.0
425.0
424.0
423.0
422.0
421.0
420.0
419.0
418.0
417.0
416.0
415.0
07/Jun/13
12/Jun/13
17/Jun/13
22/Jun/13
27/Jun/13
02/Jul/13
07/Jul/13
12/Jul/13
17/Jul/13
22/Jul/13
27/Jul/13
01/Aug/13
06/Aug/13
11/Aug/13
16/Aug/13
21/Aug/13
26/Aug/13
31/Aug/13
05/Sep/13
10/Sep/13
15/Sep/13
20/Sep/13
25/Sep/13
30/Sep/13
05/Oct/13
10/Oct/13
15/Oct/13
20/Oct/13
25/Oct/13
30/Oct/13
04/Nov/13


Reservoir level & inflow-outflow curves during Monsoon'2013
River : MAYURAKHSHI
Station: MASSANJORE
District: BIRBHUM
Max flood level=398 feet
Conservation level=398 feet
Reservoir level
Inflow
Outflow
Max. flood level
Conservation level
Inlfow & outflow in cusecs
Reservoir level in feet
Date
20000.0
19000.0
18000.0
17000.0
16000.0
15000.0
14000.0
13000.0
12000.0
11000.0
10000.0
9000.0
8000.0
7000.0
6000.0
5000.0
4000.0
3000.0
2000.0
1000.0
0.0
400.0
399.0
398.0
397.0
396.0
395.0
394.0
393.0
392.0
391.0
390.0
389.0
388.0
387.0
386.0
385.0
384.0
383.0
382.0
381.0
380.0
379.0
378.0
377.0
376.0
375.0
374.0
373.0
372.0
371.0
370.0
369.0
368.0
367.0
366.0
365.0
364.0
363.0
362.0
361.0
360.0
07/Jun/13
12/Jun/13
17/Jun/13
22/Jun/13
27/Jun/13
02/Jul/13
07/Jul/13
12/Jul/13
17/Jul/13
22/Jul/13
27/Jul/13
01/Aug/13
06/Aug/13
11/Aug/13
16/Aug/13
21/Aug/13
26/Aug/13
31/Aug/13
05/Sep/13
10/Sep/13
15/Sep/13
20/Sep/13
25/Sep/13
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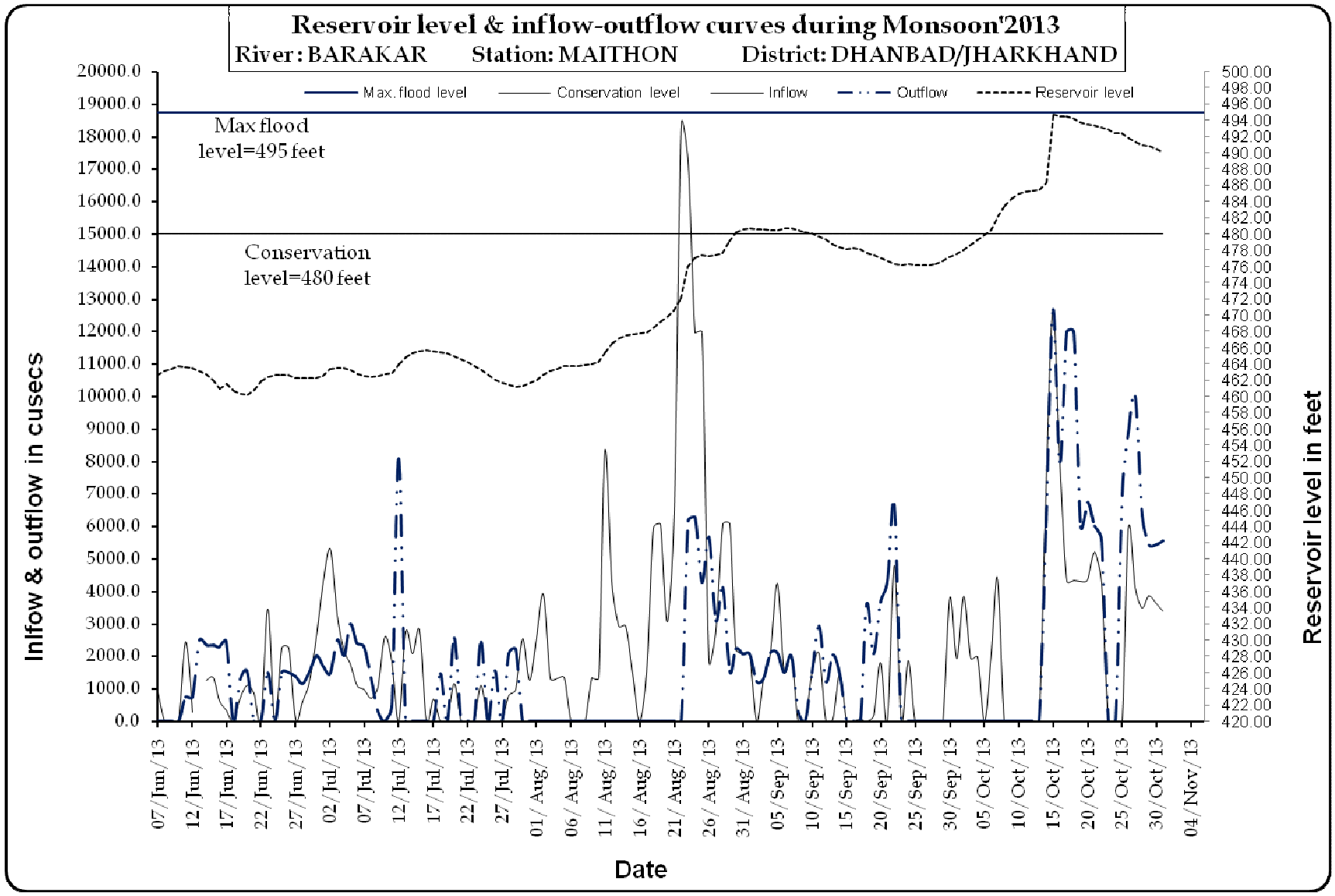
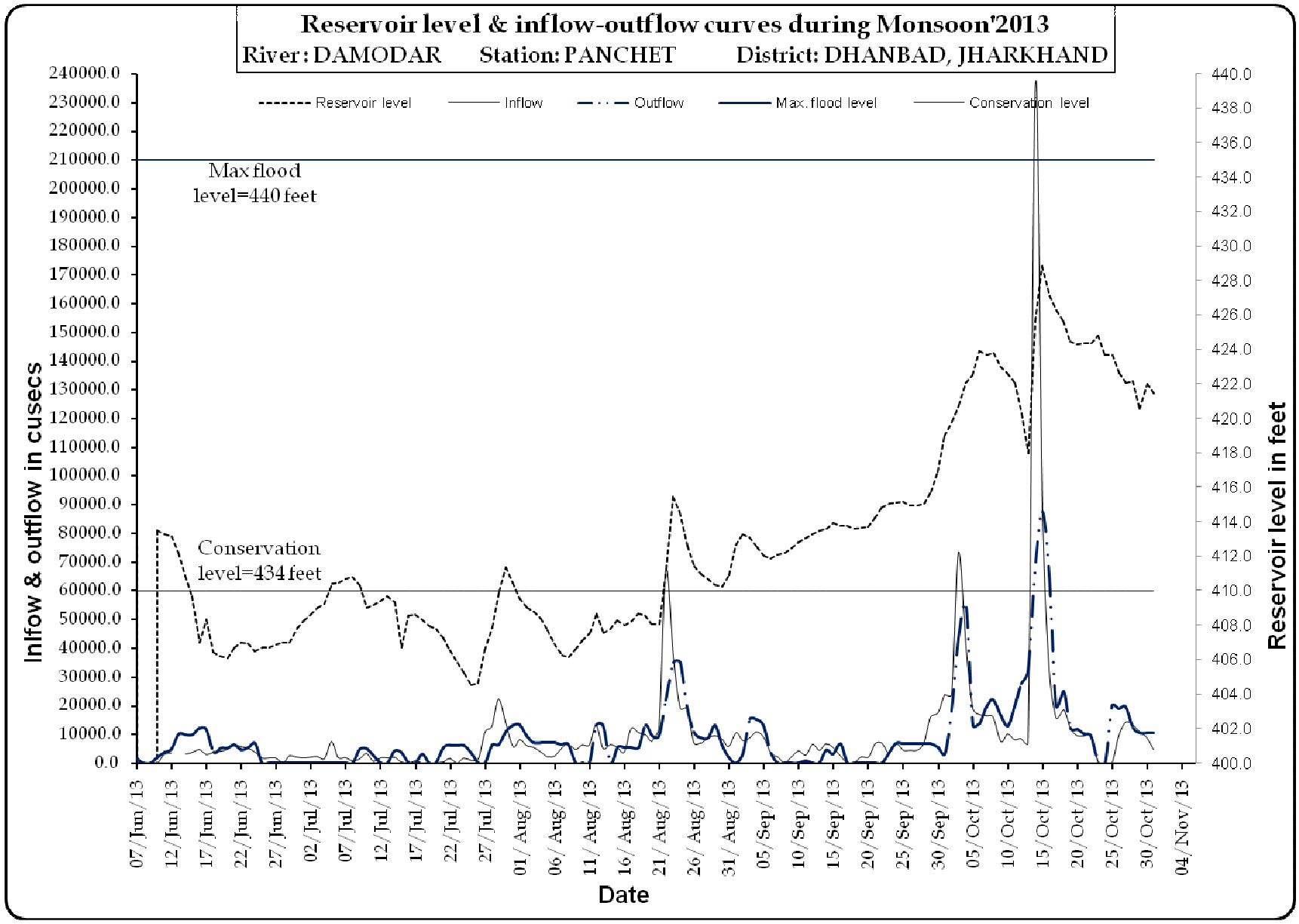
25/Oct/13
30/Oct/13
04/Nov/13


Reservoir level & inflow-outflow curves during Monsoon'2013
River : BARAKAR Station: MAITHON District: DHANBAD/JHARKHAND
Max. flood level
Conservation level
Inflow
Outflow
Reservoir level
Max flood level=495 feet
Conservation level=480 feet
Inflow & outflow in cusecs
Reservoir level in feet
Date


Reservoir level & inflow-outflow curves during Monsoon'2013
River : DAMODAR Station: PANCHET District: DHANBAD, JHARKHAND
Reservoir level
Inflow
Outflow
Max. flood level
Conservation level
Max flood level=440 feet
Conservation level=434 feet
Inlfow & outflow in cusecs
Reservoir level in feet
Date
240000.0
230000.0
220000.0
210000.0
200000.0
190000.0
180000.0
170000.0
160000.0
150000.0
140000.0
130000.0
120000.0
110000.0
100000.0
90000.0
80000.0
70000.0
60000.0
50000.0
40000.0
30000.0
20000.0
10000.0
0.0
440.0
438.0
436.0
434.0
432.0
430.0
428.0
426.0
424.0
422.0
420.0
418.0
416.0
414.0
412.0
410.0
408.0
406.0
404.0
402.0
400.0
07/Jun/13
12/Jun/13
17/Jun/13
22/Jun/13
27/Jun/13
02/Jul/13
07/Jul/13
12/Jul/13
17/Jul/13
22/Jul/13
27/Jul/13
01/Aug/13
06/Aug/13
11/Aug/13
16/Aug/13
21/Aug/13
26/Aug/13
31/Aug/13
05/Sep/13
10/Sep/13
15/Sep/13
20/Sep/13
25/Sep/13
30/Sep/13
05/Oct/13
10/Oct/13
15/Oct/13
20/Oct/13
25/Oct/13
30/Oct/13
04/Nov/13

District	24 - PARGANAS (NORTH)			
Division	Basirhat Irrigation Division			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Ichamati	Slips; toe erosion; subsidence	Basirhat-I; Baduria; Basirhat Municipality; Taki Municipality	01.06.13 - 31.10.13	
Bidyadhari	Subsidence; erosion	Sandeshkhali-I; Minakhan	01.06.13 - 31.10.13	
Dansa; Benti; Ghatihara; Tushkhali; Kantakhali; Raimongal; Bidya; Choto & Baro Kalagachi; Sahebkhali; Kalindi; Goreswar	Toe erosion; severely damaged bank	Sandeshkhali-II; Hansabad; Hingalganj	01.06.13 - 31.10.13	
Division	Bidyadhari Drainage Division			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Ichamati		Swarupnagar		23.15 sq. km.
Jamuna		Swarupnagar; Baduria; Gaighata		22.05 sq. km.
Padma Nullah		Swarupnagar; Baduria; Deganga; Habra-I		147.49 sq. km.
Baldighata		Swarupnagar; Gaighata		26.989 sq. km.
Ratna Khal		Gaighata		4.46sq. km.
Panshila		Gaighata		8.13sq. km.
Chaita		Gaighata		27.3sq. km.
Sunti river	Partial water logging	Barasat - I & II; Habra - II		16 sq. km.
Nonagong river	Partial water logging	Barasat - I & II ; Deganga		10.50 sq. km.
Haroagong - Kultigong rive	Partial water logging	Barasat - II ; Rajarhat		14.50sq. km.
Sonai khal; Kaijuri khal; Sarat Khali khal; Dantbhanga khal		Swarupnagar; Basirhat		27.415sq. km.

District	COOCHBEHAR			
Division	Coochbehar Irrigation Divn.			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Raidak - I	Apron launches & round sausage dragged down, slope pitching damaged; severe erosion ; slip; subsidence		28.06.13; 29.06.13; 07.07.13; 10.07.13; 07.09.13; 08.09.13	
Raidak - II	Apron launches & round sausage drag down, slope pitching damaged; slip;		29.06.13; 07.07.13; 11.07.13	
Kaljani	Apron launches & round sausage ; slope pitching damaged; subsidence		29.06.13; 07.07.13; 10.07.13; 11.07.13; 07.09.13	
Gadadhar	Apron, pitching & crest damaged; slips		28.06.13; 29.06.13; 07.07.13; 11.07.13; 04.09.13; 07.09.13	
Sutunga	Apron pitching damaged; round sausage dragged down		30.06.13; 07.07.13; 10.07.13	
Souldhukri	Round sausage damaged		07.07.13	
Singimari	Subsidence		15.07.13	
Ghargharia	Apron launches & round sausage dragged down		16.07.13	
Dudua	Apron launches & round sausage dragged down		30.06.13; 07.07.13; 10.07.13	
Torsa	Apron launches & round sausage dragged down; slips ; subsidence; rain-cuts; slope pitching damaged; ghoges formation		28.06.13; 08.07.13; 10.07.13; 14.07.13; 15.07.13; 02.09.13; 06.09.13	
Mansai	Apron launches & round sausage dragged down; slips ; subsidence; rain-cuts		29.06.13; 30.06.13; 07.07.13; 08.07.13; 10.07.13; 11.07.13; 14.07.13; 16.07.13; 06.09.13	
Dharala	Slips; subsidence		07.07.13; 11.07.13; 15.07.13	
Jaldhaka	Apron launches & round sausage dragged down		11.07.13	

District	JALPAIGURI			
Division				
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Teesta	Apron launches & round sausage dragged down, slope pitching damaged; slips; crest			
Raidak - I	Apron launches & round sausage drag down, slope pitching damaged; slip; subsidence			
Raidak - II	Apron launches & round sausage drag down, slope pitching damaged; slip;			
Kaljani	Apron & slope pitching damaged; subsidence			
Gadadhar	Apron, pitching & crest damaged; slips; subsidence			
Sutunga	Apron pitching damaged; subsidence			
Sankosh	Bank erosion			
Gheesh	Apron & slope pitching washed out			
Mal	Apron pitching& round sausage dragged down			
Dudua	Apron & slope pitching damaged; subsidence			
Torsa	slips ; subsidence; rain-cuts; slope pitching damaged; ghoges formation			
Mansai	Apron, pitching damaged; slips; subsidence			
Dharala	Apron damaged; bank erosion; slips			
Jaldhaka	Apron & round sausage drag down, slope pitching damaged; bank erosion			
Karala	Apron & pitching damaged; rain-cuts; slips			
Chel	Apron & pitching damaged; bank erosion			
Neora Jhora	Apron & pitching damaged; bank erosion			
Pagli Jhora	Sausage work damaged			
Khulnai	Apron & pitching damaged; bank erosion; sausage work damaged			
Diana	Apron & pitching damaged; sausage work damaged; subsidence; slips			
Jayanti	Apron & sausage damage			
Mujnai	Slope pitching damaged; subsidence; slips			

District	DARJEELING			
Division	Siliguri Irrigation Division			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Mahananda	Boulder protection work of Nagradoba embnkt.at Dhumdangi area; DimDima ; Simliguri - Samarnagar; Porajhar embnkt. ; Dadbhai colony; D/S of Champasari embnkt.severely damaged	Matigara; Phansidewa; Rajganj-Jalpaiguri	07.07.13 - 09.07.13	
Buri Balason	Bidhan Nagar mini embnkt.; Maligachh B. P. work; Tenagachh protection work; Munda Basty B.P. work; Chikanmati B.P. work severely damaged	Phansidewa	07.07.13 - 09.07.13 ; 01.09.13 - 04.09.13	
Manjha	U/S of Harivita B.P. work; Manjha Primary School B.P. work; Bhajonjote protection work severely damaed	Phansidewa; Naxalbari	07.07.13 - 09.07.13 ; 01.09.13 - 04.09.13	
Chenga	Bhoraidangichat B.P. work; Jagirjote B.P. work; Patharharharia B.P. work severely damaged	Phansidewa; Kharibari	07.07.13 - 09.07.13 ; 01.09.13 - 04.09.13	
Bataria	Bhaishati; Bengiajote primary school; Goldasjote; Kamaljote protection work; Dayaramjote ; Kutiajote B.P. work severely	Naxalbari	07.07.13 - 09.07.13 ; 01.09.13 - 04.09.13	
Mechi	Upper Mechi B.P. work ; Panitanki B.P. work severely damaged	Kharibari; Naxalbari	07.07.13 - 09.07.13 ; 01.09.13 - 04.09.13	
Boon	Dohaguri B.P. work severely damaged	Kharibari	07.07.13 - 09.07.13	
Rakti	Putirbari B.P. work severely damaged	Matigara	07.07.13 - 09.07.13	
Balason	Dhimaljote embankment severely damaged	Matigara	07.07.13 - 09.07.13	
Panchnai	Salbari protection work severely damaged	Matigara	07.07.13 - 09.07.13 ; 01.09.13 - 04.09.13	

District	HOOGHLY			
Division	Hooghly Irrigation Divn.			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Hooghly	Slips of Bank	Chandannagar Municipal Corporation; Balagarh	22.06.2013	103.453 sq. km.
Damodar	Slips of Bank; subsidence; Ghoges formation; severely damaged inspection path	Pursurah; Tarakeswar; Jangipara; Jamalpur	16.10.2013	
Mundeswari	Slips of Bank; subsidence; scour of embankment	Arambagh; Khanakul-I & II; Jamalpur	16.10.2013	
Rupnarayan	Slips of Bank	Khanakul- II	16.10.2013	
Darakeswar	Inspection Path severely damaged	Arambagh	16.10.2013	
Desh Khal	severe damage of 03 nos. Culvert	Arambagh	16.10.2013	

District	MURSHIDABAD			
Division	Ganga Anti Erosion Division - II			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Ganga - Padma	Partial damage at right bank of Padma due to erosion	Bhagawangola - II	Aug.-13 - Sept.-13	71 sq. km.
		Jalangi	Aug.-13 - Sept.-13	37 sq. km.
		Raninagar - II	Aug.-13 - Sept.-13	14.70 sq. km.
Division	Ganga Anti Erosion Division - I			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Ganga - Padma	Severe bank erosion; slips	Samserganj; Suti-II; Farakka; Lalgola	28.06.13; 25.07.13; 14.08.13; 21.08.13; 05.09.13; 04.10.13; 10.10.13; 28.11.13	
Bagirathi	Severe bank erosion	Bhagawangola-I; Sagardhigi; Raghunathganj; Beldanga - I & II	21.08.13; 23.08.13; 09.09.13	
Bagmari	Severe bank slips on left bank	Farakka	08.11.13	
Division	Berhampore Irrigation Division			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Bhairab	Vertical slips; sluice damage			
Padma	Sluice damage			
Dwarka	Vertical slips; sluice damage			
Brahmani	Vertical slips; sluice damage			
Babla	Vertical slips			
Bele	Slips			
Mayurakshi	Slips			
Bhagirathi	Bank erosion			

District	MALDA			
Division	Malda Irrigation Division			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Ganga	Slips; depression; rain-cuts; erosion; subsidence; sailing of embankment slope	Manikchakghat; Gazole; Kaliachak - II & III ; Old Malda; Bamangola; English Bazar		
Tangon	Breach of village road cum embankment			
Mahananda	Slips			
Fulhaar	Engulfment of existing bank protection work			
Punarbhaba	Breach of embankment cum village road			
Division	Mahananda Embankment Division			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Fulhaar	Breach of ring bundh; seepage & slips; subsidence; severe bank erosion	Harishchandrapur - II; Ratua - I & II; Chanchal - I & II	07.08.13-21.08.13; 16.08.13-22.08.13;	13 sq. km.
Mara Mahananda	Slips; subsidence		30.08.13-08.09.13;	
Mahananda	Slips; subsidence; severe bank erosion		20.09.13-04.10.13	

District	BURDWAN			
Division	Burdwan Irrigation Division			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Bhagirathi	Bank erosion [Length - 1200+1200+800+440+700+2160+1650+2500	Katwa - II, Purbasthali I & II, Kalna - I	01.06.2013 - 31.10.2013	

District	BANKURA			
Division	Bankura Irrigation Division			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Silabati	Erosion of village road and cultivable land	Simlapal	30.05.2013 - 31.05.2013	

District	PASCHIM MEDINIPUR			
Division	K. K. B.			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Kaliaghai	Slips; ghoges	Narayangarh; Sabang	28.07.13-30.07.13; 18.08.13-21.08.13	
Deuli	Slips; depression of embankment crest	Sabang	28.07.13-30.07.13	
Kharika khal	Slips	Sabang	28.07.13-30.07.13	
Dokhali khal	Slips	Sabang	28.07.13-30.07.13	
Kapaleswari	Slips	Sabang	28.07.13-30.07.13; 18.08.13-21.08.13	
Kalimandap khal	Slips	Sabang	28.07.13-30.07.13	
Ganapath	Slips	Sabang	28.07.13-30.07.13	
Baskona; Bagmari; Kalchiti; Amrakhali	Slips	Sabang	28.07.13-30.07.13	
Division	East Midnapur Division			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
New Cossye	Ghoges; rain-cuts	Debra	31.07.13 - 15.10.13	
Buxi (right)	Slips	Pingla	31.07.13 - 15.10.13	
Cossye (left)	Ghoges	Debra	31.07.13 - 15.10.13	
In between Buxi khal & Patchanda khal	Water logged due to heavy rainfall	Pingla	31.07.13 - 15.10.13	18.32 sq.km.

District	PASCHIM MIDNAPUR			
Division	West Midnapur Division			
River/Canal	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
New Cossye	Ghoge ,Raincut,crest damage slips,River berm level scour and erosion,top of embankment damage,R/S berm errosion at Chainage 27.15 K. M. to Chainage 27.40 Km.,Damage of Tabagaria Sluice,breach of embankment having length (70.00 Mt.+ 30.00Mt.) R/B and 80.00Mt.(L/B) and 30.00Mt.	Debra	31.05.2013 - 15.11.2013.	(2.00 + 1.00 + 5.00 + 3.00)=11.00 Sq. Km.
Old Cossye	Ghoge ,Raincut,crest damage slips,River berm level scour and errosion.	Debra	31.05.2013 -15.11.2013.	Nil
Cossye	Ghoge ,Raincut,crest damage slips,River berm level scour and errosion and breach of Embankment having lenth 60.00 Mt.(R/B of River Cossye).	Debra,Sadar	31.05.2013 - 15.11.2013	5.00 Sq. Km.
Subarnarekha	Rain cuts, Ghoges, slips,crest damages,damages of Moorum Inspection path,10 Nos. Sluice Gate damages,scouring of River bank,R/B errosion.	Gopiballavpur -I, Nayagram, Gopiballavpur-II,	13.10.2013 -17.102013	(9.00+9.00+3.00+6.00 +32.00+66.00+70.00) = 195.00 Sq. Km.
Muruli canal	Rain cuts, Ghoges, slipss,Hanas,damages of Moorum Inspection path.	Nayagram	13.10.2013 -17.102013	4.0 Sq. Km.
Rangium canal	Rain cuts, Ghoges, slipss,Hanas,partly damage of weir structure.	Nayagram	13.10.2013 -17.102013	1.0 Sq. Km.
Shuklakhari canal	Rain cuts, Ghoges, slipss,Hanas,damages of Moorum Inspection path.	Gopiballavpur I.	13.10.2013 -17.102013	7.0 Sq. Km.
Shyamtarangi canal	Rain cuts, Ghoges, slipss,Hanas,damages of Moorum Inspection path.	Gopiballavpur.	13.10.2013 -17.102013	6.0 Sq. Km.
Dulong	Scouring of river bank	Sankrail	13.10.2013 -17.102013	16 Sq. Km.
Banshi Khal	Scouring of river bank	Sankrail	13.10.2013 -17.102013	8 Sq. Km.

District	PURBA MEDINIPUR			
Division	K. K. B.			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Baghai	Slips	Patashpur - I	28.07.13 - 30.07.13; 18.08.13 - 21.08.13	
Kaliaghai	Slips; depression of embankment crest	Patashpur - I	28.07.13 - 30.07.13	
Division	East Midnapur Division			
River	**Nature of Damage**	**Affected Blocks**	**Date of Occurrence**	**Area Innundated**
Hooghly	Raincuts; subsidence & slips	Mahisadal; Sutahata	20.08.13 ; 21.08.13	
Haldi	Raincuts; subsidence & slips	Mahisadal	20.08.13 ; 21.08.13	
Rupnarayan	Raincuts; subsidence & slips	Tamluk; Nandakumar; Kolaghat	20.08.13 ; 21.08.13; 26.10.13	43.70 sq. km.
Cossy	Raincuts; subsidence & slips	Nandakumar	20.08.13 ; 21.08.13; 26.10.13	
Soadighi khal; Nunnan khal; Damodarpur khal; Kamarda khal; Pratapkhali khal; Pairatungi khal; Khojar khal; Baichberia khal; Basantakhali khal; Sankarara khal; Kalikakhali khal; Tongtala khal; Basua khal; Gangakhali khal;Denan canal; Khariachak khal; Nowabania khal; Mirzapur khal	Raincuts; subsidence; slips; overtopping	Sahid Matangini; Nandakumar; Tamluk Municipality; Tamluk	20.08.13 ; 21.08.13; 16.10.13; 26.10.13	
Moyna New Cut	Slips	Moyna		

District	PURBA MEDINIPUR			
Division	East Midnapur Division			
River	Nature of Damage	Affected Blocks	Date of Occurrence	Area Innundated
Buxi Khal	Breach (adjacent side of previous breach point)	Panskura - I	01.06.13 ; 31.07.13	19.94 sq. km.(Chaitnyapur - I & II; Haur; Ghoshpur G.P.)
New Cossye	Breach (80.00 m.+80.00 m.+53.00 m.=213.00 m.)	Panskura Municipality	24.08.13; 15.10.13; 27.10.13	105.773 sq.km.(Panskura Municipality- ward no - 13,14,15; Panskurablock / Tamluk naikuri block
New Cossye	Damage of bank; slip; subsidence; ghoges; raincuts; old boulder pitching damaged	Panskura - I; Nandakumar; Panskura Municipality;	31.07.13 - 15.10.13	
Buxi (left)	Slips	Panskura - I	31.07.13 - 15.10.13	
New Cossye (left embankment)	I. P. damaged	Tamluk - I & Panskura - I	31.07.13 - 15.10.13	
New Cossye (right embankment)	Raincuts; subsidence; slips; ghoges; Damage of bank; old boulder pitching damaged	Moyna	31.07.13 - 15.10.13	
Cossye (right embankment)	Subsidence; ghoges	Moyna; Panskura	31.07.13 - 15.10.13	
Kherai Buxi (right embankment)	Severe raincuts; ghoges; slips	Panskura; Moyna	31.07.13 - 15.10.13	
Durbachati (right embankment)	Rain-cuts; ghoges; overtopping	Panskura - I; Kolaghat	31.07.13 - 15.10.13	
Mugdari (right embankment)	Overtopping; slips	Panskura - I	31.07.13 - 15.10.13	
Topa Drainage Cut (Left & Right)	Rain-cuts; ghoges; overtopping	Kolaghat; Panskura	31.07.13 - 15.10.13	
Chandia	Subsidence; slip; sluice sealing; bridge damage;	Moyna	31.07.13 - 15.10.13	
Cossye (left)	Ghoges	Panskura	31.07.13 - 15.10.13	
Between Dehaty channel, Topa srainage cut & Topa khal	Water logged area due to heavy rainfall	Kolaghat	31.07.13 - 15.10.13	23.454 sq. km. Panskura Block(Kesapat G.P.); Kolaghat Block(Sidhya & Pulsita)

Statement of districtwise inundation area during flood season 2013

District	Geographical Area (2001 Census)	Area Inundated in due to breach (Sq. km)	Area Inundated in not due to breach (Sq. km)	% of ininundation due to breach	% of ininundation not due to breach, i.e. due to waterlogging; tide lockage etc.
1	2	3	4	5	6
Darjeeling	3149				
Jalpaiguri	6227				
Coochbehar	3387				
Uttar Dinajpur	3140.0				
Dakshin Dinajpur	2219				
Malda	3733	13.00		0.3	
Murshidabad	5324		122.70		2.3
Birbhum	4545				
Burdwan	7024				
Bankura	6882				
Purulia	6259				
Nadia	3927				
Hooghly	3149		103.45		3.3
Howrah	1467				
North 24-Parganas	4094		327.98		8.0
South 24- Parganas	9960				
Purba Medinipur	4295	125.71	67.15	2.9	1.6
Paschim Medinipur	9786	16	231.32	0.2	2.4
Total ::	88567	154.71	852.60	0.2	1.0